



SOUTHERN RHODESIA.

REPORT

ON

The Public Health

For the Year 1928.

**Presented to the Legislative Assembly,
1929.**

Salisbury, Rhodesia :

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The Reports of the District Medical Officers, the Compound Inspectors, the Medical Superintendent, Ingutsheni Mental Hospital, and the Board of Inspection on the Gomohuru Leper Settlement have not been printed.



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PART I.

CHAPTER I.—INTRODUCTORY.

Custom has decreed that the calendar year shall be accepted as one of the milestones of life, each succeeding year marking another stage in the evolution of an individual, a country or a nation, and bringing with it its own particular problems to be faced and policies to be determined. From the public health aspect the year 1928 was distinguished in this Colony by the awakened interest which is being shown by the people in certain health problems which are acquiring a prominence in the intimate life of various sections of the community, the most important of which are as follows:—

(a) An increased interest in maternity and child welfare, with a demand for more maternity homes in centres available to the people, coupled with a need for a lowering of the costs of child-birth to the parent.

(b) A heightened interest in the morbidity and mortality rates amongst non-Europeans, both in employment and living in the big reserves, and a demand by the natives themselves as well as by certain sections of the white population for an extension of health services amongst them.

(c) A demand for a more intensive campaign against venereal disease, especially amongst the native races.

(d) A growth of public interest in the management and control of hospitals, and in the cure and prevention of disease.

(e) A more intelligent criticism of the duties and responsibilities of local and central authorities towards the care of the health of the people.

It must be admitted that here the underlying causes at work are to a great extent based on ignorance of the existing conditions, with a fear of the unknown, combined with some misrepresentation; and it is the aim of the Public Health Report to place before Parliament and the people the facts in their proper setting and their relation to the community at large, together with a statement of the policy which has been agreed upon or is contemplated. The report on the public health of the Colony for the past year cannot, however, be commenced without first referring to the lamentable and tragic death at an early age of Dr. H. V. A. Gatchell, the first Medical Inspector of Schools, which occurred in November, following on an operation shortly after his return from long leave. His untimely death is a great loss to the Department and to the country, as well as to his wide circle of friends. He had the distinction of inaugurating the inspection of school children and schools in this Colony, and has placed this Establishment on a sound and practical foundation.

Nursing Service.—Applications were received from 89 qualified nurses and 128 candidates for training, amongst whom the following appointments were made:—Eighteen qualified nurses and 26 probationer nurses, 9 to Bulawayo and 17 to Salisbury. Thirteen qualified nurses left the Service, 5 to get married and 8 for other reasons. Two matrons left to get married. The Senior Matron, Miss Adlam, resigned and went on pension. Miss T. M. Rees was appointed matron-in-chief, and assumed duty on the 23rd November, 1928.

In the final examination of the Colonial Medical Council there were 8 entries; 6 passed and 2 failed. The latter sat again in December and were successful. The Colonial Medical Council held an examination in October in anatomy and physiology for nurses who had completed one quarter of their training. In this examination there were ten entries from Salisbury, and the following signal successes were obtained:—The first six places, the eighth, the fifteenth and the nineteenth. There was one failure. That the first six places in this examination were filled by Rhodesian candidates is proof that the interest and enthusiasm of the probationers and the high standard of training are being maintained.

Financial.—The following figures show the expenditure under the Public Health and Hospital Votes under the respective headings for the year 1928, as compared with 1927, 1926, 1925 and 1924:—

Public Health (Expenditure).

	1928	1927	1926	1925	1924
	£	£	£	£	£
Staff salaries	29,736	28,314	27,304	24,972	24,745
Travelling expenses, Medical Director and staff, Government Medical Officers, Bacteriologist, Compound Inspectors, and rail and port charges... ..	7,832	6,329	5,453	4,100	3,673
Treatment, maintenance and transport of lunatics, lepers and sick paupers, repression of infectious and contagious diseases, upkeep of lazarettos, purchase of quinine and vaccine lymph, grants and subsidies	19,003	13,194	10,335	8,533	8,600
<i>Public Health Laboratory and other Charges.</i>					
Expenditure	1,238	2,257	1,568	594	400
Totals	57,809	50,094	44,660	38,199	37,418

Public Health (Revenue).

	1928	1927	1926	1925	1924
	£	£	£	£	£
Bacteriological fees	619	572	392	139	362
Sale of quinine	1,827	2,245	2,281	2,331	1,547
Totals	2,446	2,817	2,673	2,470	1,909

Hospitals, Native Dispensaries and Asylums (Expenditure).

	1928	1927	1926	1925	1924
	£	£	£	£	£
Salaries	29,350	25,198	23,890	21,533	15,962
Travelling expenses on appointment, duty or leave, rail and port charges ...	2,217	1,389	1,645	1,255	1,440
Provisions and medical comforts (including "Produce, etc.," 1928)	23,186	21,260	7,754	6,596	6,566
Fuel, light and water	5,539	4,869	4,480	3,971	2,892
Furniture, equipment, repairs and clothing	7,795	9,396	6,975	4,325	3,664
Drugs, disinfectants and surgical appliances	10,402	7,362	6,792	7,005	4,426
Laundry	1,842	2,214	1,558	1,446	1,130
Sanitary fees	622	608	566	508	455
Produce, etc.	*	*	11,446	11,181	7,764
Miscellaneous	1,093	656	868	473	387
Grants-in-aid to hostels, hospitals and district nursing	5,017	2,269	1,992	2,959	6,347
Rail and port charges on hospital equipment	153	—	—	—	—
Totals	87,216	75,221	67,966	61,252	51,033

*Now included under "Provisions and medical comforts."

Hospitals, Native Dispensaries and Asylums (Revenue).

	1928	1927	1926	1925	1924
	£	£	£	£	£
Fees collected from paying patients ...	30,478	27,166	25,847	21,251	13,326

Expenditure on Government hospitals, including Ingutsheni Mental Hospital, during 1928 amounted to £80,346 gross, as compared with £67,338 during the previous year, £61,856 in 1926, £56,537 in 1925 and £43,810 in 1924, an increase of £36,536 in the last five years. The revenue collected amounted to £30,478, as against £27,277 collected in 1927, £25,847 in 1926, £21,251 in 1925 and £13,326 in 1924, an increase during the last five years of £17,152.

The gross earnings from paying patients amounted to £61,494, as compared with £34,716 for the previous year, an increase of £26,778; while the total number of patients maintained was 12,053, as compared with 10,378 for the previous year, an increase of 1,675. In addition to the earnings from paying patients, the loss of revenue represented by the free treatment of paupers, police, gaol officials and others who were entitled to free medical attendance in Government hospitals, and for the cost of whom no inter-departmental charges are made, amounted to £16,904, and if Ingutsheni Mental Hospital be included, this figure is increased to £28,054, as compared with £26,244 in 1927, £23,811 in 1926, £21,475 in 1925 and £19,142 in 1924.

Returns showing the number of beds, the daily average of patients treated, the revenue and expenditure, the average cost per patient per diem, the number of free patients, the number of units treated, the cost to Hospital Votes of treatment and maintenance on the basis of the gross expenditure, and the loss of revenue represented thereby at the various institutions will be found in Part III. of this report.

CHAPTER II.—WORK OF THE DEPARTMENT.

(1) **Public Health Laboratory.**—The report of the Director of the Public Health Laboratory, which will be found in Part II. of this report, is a detailed statement of the work done during the year on the clinical side; while on the research side Dr. G. R. Ross, of the London School of Hygiene and Tropical Medicine, and Mr. Leeson, the Research Entomologist, have submitted separate reports. The work undertaken by the Public Health Laboratory is being extended every year. Dr. Ross and Mr. Leeson, having completed their term in this Colony, return early in 1929, and will be replaced by other research workers

from the London Tropical School in accordance with the standing arrangement between the School and the Government. The existing arrangement between the School and the Government came up for consideration again in 1928, and after some correspondence it was agreed by both sides that it should be extended on the existing conditions for another period of five years. Exactly what line of research shall be next followed and who the visiting research workers will be have not yet, however, been determined, and are still the subject of discussion.

On the routine side of the Laboratory, which is directly under the control of the Director, the work has again shown a great increase in volume, and the services which the Laboratory now renders to local authorities, the medical profession and the public generally, are gaining in quantity and importance every year. A demand for a bacteriological laboratory of their own has been made by the people of Bulawayo, strongly supported by the local medical practitioners and the Town Council. It is admitted that laboratory facilities at Bulawayo, especially for clinical diagnosis and the preparation of vaccines, are desirable, as the delay entailed in sending to Salisbury or Johannesburg is considerable; but how far the total expenditure involved should be a charge on the Treasury, and what proportion should be borne by the local authority and public bodies benefiting, is a matter for consideration and discussion. The subject of financial adjustments in respect of services rendered by the Public Health Laboratory to local authorities, medical practitioners, corporations and private individuals is calling for settlement, and is now the subject of correspondence and discussion between the parties interested.

(2) **Medical Inspection of Schools.**—The medical inspection of children of school age was augmented this year by the appointment of a woman Medical Inspector, whose duties comprised the medical inspection of school girls, with the added responsibility of combining with local authorities and charitable bodies in the organisation of child welfare centres, and ante-natal clinics where required. During the absence of the Medical Inspector of Schools on leave, and his death shortly after his return, a larger share of the school examination during the year fell to the lot of Dr. Annie Clark, the Assistant Medical Inspector, with the added responsibility of compiling the annual report on the medical inspection of school children, which is printed in Part II. The proportion of children attending school who were seen and medically examined by the Inspector was 46.30 per cent., or nearly one-half of the total number of children attending school, and it is expected that this proportion will be considerably increased when both Inspectors are working throughout the year, and should be sufficiently frequent to allow of every child being medically examined at least three times, if not oftener, in its school career. In addition to the medical examination of scholars, a survey of mentally defective and backward children was undertaken, and a special report with recommendations for dealing with these individuals will be issued at an early date. No special provision as yet exists in this Colony for the separate instruction of mentally deficient and backward children.

The diet of school children, with special reference to the feeding at Government school hostels, was also the subject of an extended enquiry, and as a result recommendations were made that the protein content of the diet should be augmented, it being advised that deficiencies in this direction could best be remedied by an increase in the ration of fresh milk allowed per child. The recent reports of the Scottish Board of Health on the effect on the nutrition of school children of an additional ration of milk to the diet are very illuminating in this respect, and worthy of the earnest consideration of the authorities responsible for the care of these children.

The present dental condition of school children is fully reported upon by the Government Schools Dental Surgeon; *vide* Part II.

The total number of children examined and treated by him amounted to approximately 9.75 per cent. of the children attending Government schools. The demand for this service is growing, and the time occupied in treating dentally all children requiring treatment is considerable, and it has been decided to appoint a second Schools Dental Surgeon at an early date in order to increase the efficiency of the service. This applies more especially to children attending schools in districts where no dental attention is available and where it costs a considerable sum to bring them to the nearest practising dentist.

(3) **Inspection of Mine Compounds and Native Labour employed on Mines and other Works.**—There are now two Inspectors of Compounds who are Native Department officials of sufficient seniority and experience, and who are seconded for a period of two years to the Public Health Department. Their offices and centres of activity are in Salisbury and Bulawayo respectively. These Inspectors at regular intervals visit all the mines, railways and other works where natives are employed in any numbers, and where they are fed by their employers and housed in specific villages or compounds. The duties of these Inspectors embrace the inspection of all systems of housing, diet and the hygiene and sanitary life of the native labourer, both at his work and in his leisure, and generally the application of the health and sanitary regulations under the Mining Law and the administration of the Native Labour Regulations in so far as they concern the labourers in their inspectorate. In their reports both the Inspectors comment on the time expended on the enquiries into the non-payment of wages and the instigation of legal proceedings on this account, this especially applying to the smaller mines and prospecting ventures, whilst the Inspector at Bulawayo further comments on the filtration of mine labour from the smaller to the larger mines and the difficulty the former have in filling their complement of labour. The feeding and housing of native miners and the sanitary conditions under which they live have been satisfactory, and no prosecutions for the breach of the regulations on this account have occurred during the year. There is a growing tendency on the part of the mining authorities to increase the free native ration as an inducement to keeping experienced labour on the mine, which is undoubtedly to the benefit of the employee, though it must also be admitted that these improvements in the conditions of life of the native labourers do not come from the employer alone, for the employee himself is learning also, and now demands a much higher standard of living all round.

(4) **Public Health Legislation.**—(a) *Public Health Act.*—Regulations were framed under section 41 of this Act providing for more adequate control of small-pox amongst natives by the local authority in Bulawayo and the vicinity.

(b) “*Medical, Dental and Pharmacy Act, 1927.*”—This Act was promulgated towards the end of 1927, after which the Medical Committee, constituted under the old and obsolete Act of 1830, ceased to function. Under section 3 of the new Act a Medical Council for Southern Rhodesia was constituted, consisting of the Chief Medical Officer of the Colony, a legal member and a member of the medical profession, unconnected with the Government. These were nominated by the Minister, three medical practitioners, two dentists and three chemists being elected by the registered doctors, dentists and chemists respectively.

(5) **Medical Council.**—The Medical Council as constituted met for the first time in September, 1928, and appointed a small executive committee to meet at frequent intervals for the conduct of business, it being considered unnecessary to call the full Council together more frequently than once a year, or for special business.

During 1928 the admissions to practise were as follows:—

Medical Practitioners.—Dr. Annie Clark, M.B., Ch.B., D.P.H., M.D., Sheff.; Dr. H. W. Davey, M.B., B.S., New Zealand; Dr. A. W. Lassowsky, L.S.A., Lond.; Dr. R. Macdonald, M.B., Ch.B., Edin.; Dr. H. Mostert, M.B., Ch.B., Edin.; Dr. I. R. Rosin, B.A., M.B., B.Ch., B.A.O., L.M., F.R.C.S., Edin.; Dr. L. A. Rubidge, M.B., Ch.B., Edin., D.O.M.S., Lond.; Dr. W. E. Robertson, M.B., Ch.B., Edin.; Dr. A. Strange, R.C.S., Eng., L.R.C.P., Lond.

Dentists.—R. A. Blair, L.D.S.; H. E. Spencer-Payne, L.D.S., R.C.S., Eng.

Chemist and Druggist.—W. W. Hole, M.P.S.

The Council will at an early date submit regulations, framed under the Medical, Dental and Pharmacy Act, providing for the registration of nurses, midwives, masseuses and radiographers.

(6) **Habit-forming Drugs Legislation.**—Under the Southern Rhodesia Opium and Habit-Forming Drugs Regulations Proclamation of 1923 the following was notified as coming within the meaning of the regulations:—“Benzoyl morphine and any preparation, admixture and extract containing benzoyl morphine.”

Import Certificates.—Fifty-two import certificates were issued, one of which was subsequently cancelled. The total of habit-forming drugs covered by these certificates is as follows, and approximately 70 per cent. of the anhydrous morphine mentioned was imported in tincture of opium:—

Anhydrous morphine	71.36 ounces.
Medicinal opium	42.8 ounces.
Extract of opium	208.0 grains.
Diamorphine (heroin), morphine equivalent	2.62 ounces.
Cocaine	20.5 ounces.

Export Certificates.—Six export certificates were issued for the following drugs:—

Anhydrous morphine	105.7 grains.
Heroin, morphine equivalent	83.3 grains.
Cocaine	232.25 grains.

Permits issued by the Veterinary Department under the provisions of Government Notice No. 368 of the 27th June, 1924, numbered 18, representing 138 ounces of tincture of opium.

CHAPTER III.—VITAL STATISTICS.

Population.—The mean population—European, Asiatic and coloured—as at the 30th June, 1928, is estimated by the Government Statistician as follows:—

	Persons.
European	44,950
Asiatic	1,555
Coloured	2,245
	<hr/> 48,750

The estimate indicates an increase in the European population since the publication of the last annual report of 3,326, and includes additions—

(a) in respect of natural increase (*i.e.*, excess of births over deaths) amounting to 627;

(b) in respect of *net* immigration amounting to 2,699.

European Births.—The European births during the year numbered 1,104 (563 males and 541 females), as compared with 1,013 (504 males and 509 females) in 1927. Of the 1,104 births registered, 26 (9 males and 17 females) were illegitimate. Still-births recorded numbered 29. The crude birth rate in 1928 per 1,000 of the mean population was 24.6, compared with 24.3 in 1927. Omitting illegitimate births, it is estimated that the legitimate birth rate per 1,000 married women between 15 and 45 years of age was 181.0 in 1928, as against 181.2 in 1927.

The following Empire comparisons may be of interest:—

(a) *Crude Birth Rates, Empire Comparison.*

Country, province or state.	Year.	Crude birth rate per 1,000 of total population.	Country, province or state.	Year.	Crude birth rate per 1,000 of total population.
Quebec	1927	31.9	Western Australia	1927	22.0
Union of South Africa	1928*	25.87	Australia	1927	21.7
Union of South Africa	1927	25.95	Northern Ireland	1927	21.3
New Brunswick	1926	25.3	Ontario	1927	21.2
Canada (including Quebec)	1927	24.6	Irish Free State	1927	20.3
Southern Rhodesia	1927	24.3	New Zealand	1927	20.3
Southern Rhodesia	1926	23.8	Victoria	1927	20.3
Southern Rhodesia	1925	23.0	South Australia	1927	20.1
Alberta	1926	23.8	Scotland	1927	19.8
Tasmania	1927	23.0	Great Britain and Northern Ireland	1927	18.3
New South Wales	1927	22.7	England and Wales	1927	16.7
Queensland	1927	22.2			

*Provisional figure.

(b) *Legitimate Birth Rates, Empire Comparison.*

Country, province or state.	Year.	Legitimate birth rate per 1,000 married women of 15 to 45 years of age.	Country, province or state.	Year.	Legitimate birth rate per 1,000 married women of 15 to 45 years of age.
Quebec	1924	307.8	Scotland	1925	190.0
New Brunswick ...	1924	224.8	South Australia ...	1920-22	187.1
Union of South Africa ...	1921	219.3	New Zealand ...	1921	181.6
Tasmania	1920-22	218.3	Southern Rhodesia ...	1927	181.2
Queensland	1920-22	212.6	Southern Rhodesia ...	1926	177.3
Canada (including Quebec)	1924	206.9	Southern Rhodesia ...	1925	168.4
Australia	1920-22	196.5	Ontario	1924	176.3
Western Australia ...	1920-22	196.2	Alberta	1924	158.5
New South Wales ...	1920-22	193.9	England and Wales ...	1926	139.8
Victoria	1920-22	192.9			

Asiatic and Coloured Births.—In addition to the foregoing, the following non-European births were recorded during the year:—

	Males.	Females.	Total.
Indian	42	28	70
Chinese	5	3	8
Coloured	31	25	56
	—	—	—
Total	78	56	134

Of these, 2 Indian and 1 coloured were plural births and 18 were illegitimate.

European Deaths.—The deaths among Europeans registered during the year numbered 477, as compared with 377 in 1927.

Crude Death Rate.—Calculated on the estimated mean population in 1928, the crude death rate was 10.6 per 1,000 of total population. The corresponding rate in 1927 was 9.1. The number of deaths of male Europeans was 316 in 1928, as compared with 258 in the previous year, an increase of 58 deaths. At 161, deaths of female Europeans were 42 more than in 1927. The higher death rate recorded for 1928 was due in part at least to the greater mortality among infants under one year of age. When it is said that the crude death rate for the whole population is 10.6 per 1,000 it must not be overlooked that it conceals a large variation in death rates among the various age groups, as is shown by the following table:—

SPECIFIC DEATH RATES PER 1,000 AT EACH AGE PERIOD, 1928.

MALES AND FEMALES SEPARATELY.

Age period.	Males.	Females.	Persons.
0-1	89.78	74.90	82.24
1-5	8.08	7.54	7.82
5-15	2.70	2.21	2.47
15-25	6.17	2.27	4.46
25-35	4.90	5.59	5.21
35-45	10.31	4.48	7.68
45-55	18.96	9.00	15.20
55-65	22.33	17.77	20.76
65-75	61.86	50.91	57.86
75 and over	75.88	69.31	73.18
	—	—	—
All ages	12.55	8.15	10.61

At ages above that of infants the most notable features of the return are: among males, the increased number of deaths in age groups 35-45 and 45-55, and among both sexes the decrease in the group 75 and over.

Infantile Mortality.—The number of deaths of infants under one year of age registered during the past year was 80, or 32 more than in the previous year, the infantile death rate per 1,000 living births being 72, as compared with 47 in 1927. The large increase in infantile mortality during the past year was due to the larger number of deaths from malaria (10 against 4), diarrhœa (11 against 2), congenital malformations (10 against 2) and congenital debility, etc. (21 against 11). In most countries the major portion of the deaths of infants under one year occur in the first three months after birth. Southern Rhodesia is no exception, as the following figures show:—

INFANTILE MORTALITY, 1923-27 AND 1928.

Deaths from all causes	Annual average				Mortality per 1,000 living births			
	1923-27		1928		1923-27		1928	
	No.		No.		Per mille		Per mille	
	M.	F.	M.	F.	M.	F.	M.	F.
Under one week	12	7	13	9	24.6	15.9	23.1	16.6
1-4 weeks... ..		4	5	4	10.3	9.1	8.9	7.4
Total under 4 weeks ...	17	11	18	13	34.9	25.0	32.0	24.0
4 weeks to 3 months ...	5	4	9	4	10.3	9.1	16.0	7.4
3-6 months	5		10	11	10.3	6.8	17.8	20.3
6-9 months	4	4	3	5	8.2	9.1	5.3	9.2
9-12 months	3	3	4	3	6.1	6.8	7.1	5.6
Total under 1 year ...	34	25	44	36	69.8	56.8	78.2	66.5

CAUSES OF DEATH IN CHILDREN UNDER ONE YEAR OF AGE.

	1923	1924	1925	1926	1927	1928
Malaria	11	3	5	...	4	10
Blackwater fever	1	...	...	...	...	...
Measles ... ..	...	...	1	...	...	1
Whooping cough	1	5	1	2	...	2
Diphtheria and croup ... ..	...	...	1	1	...	...
Influenza	6	2	4	...	1	2
Dysentery	2	1	...	...	2	1
Purulent infection and septicæmia ... ..	...	...	1	...	...	1
Tuberculosis of the lungs ... ..	...	...	1	...	...	...
Rickets ... ..	...	...	...	...	...	1
Syphilis ... ..	...	...	...	...	1	...
Other general diseases ... ..	...	2	...	1	...	...
Simple meningitis ... ..	...	2	...	1	...	3
Cerebro-spinal meningitis ... ..	...	1	...	...	1	...
Cerebral hæmorrhage ... ..	...	...	...	...	1	...
Convulsions of infants	6	1	6	2	3	2
Diseases of the ears ... ..	...	...	...	1	...	...
Other diseases of the nervous system ... ..	...	...	...	...	2	...
Acute endocarditis ... ..	...	...	...	...	...	1
Organic diseases of the heart ... ..	...	...	...	...	3	...
Embolism and thrombosis ... ..	...	...	...	...	...	1
Diseases of the larynx	1	...	...	1	...	...
Acute bronchitis	3	3	3	...	1	1
Broncho-pneumonia ... ..	...	2	3	1	7	1
Pneumonia	6	7	6	4	...	8
Asthma ... ..	...	...	...	...	1	...
Diarrhœa and enteritis	7	7	5	6	2	11
Hernias, intestinal obstructions	1	1	1	2	1	1
Simple peritonitis ... ..	...	...	...	...	1	1
Diseases of the intestines ... ..	...	...	1	1	...	...
Other diseases of the liver ... ..	...	...	1	...	...	...
Gangrene ... ..	...	1	...	...	...	...
Other diseases of the skin and annexa	1	...	...	1	...	...
Congenital malformations	2	1	1	1	2	10
Congenital debility, icterus and sclerema	20	26	21	18	11	21
Other diseases peculiar to early infancy	1	...	2	...	2	1
Burns, conflagration excepted ... ..	...	...	1	...	1	...
Absorption of deleterious gases ... ..	...	...	1	...	...	...
Cause of death not specified or ill-defined	2	...	2	3	1	...
	—	—	—	—	—	—
	71	65	68	46	48	80

Maternal Mortality.—A subject of cognate interest with that of infantile mortality is the maternal mortality arising out of child-birth. Six cases of this kind were registered during 1928, and the death rate from these causes per 1,000 living births was 5.4. Mortality from these causes is lowest among mothers in their twenties and increases with mothers of more advanced years. The cases referred to all fell into the age group 25-35.

CHAPTER IV.—PUBLIC HEALTH.

Infectious, Communicable and Preventable Diseases.

Notifiable Diseases.—The following is a summary of the infectious disease bulletins which are issued weekly by the Department of Public Health, with a comparison with the previous two years:—

Disease.	1926.		1927.		1928.	
	Number of cases		Number of cases.		Number of cases.	
	European.	Native.	European.	Native.	European.	Native.
Chicken-pox	114	257	185	461	107	310
Small-pox ... ..	...	1	...	6	1	254
Scarlet fever	11	...	16	...	24	...
Measles	151	231	16	95	78	9
Whooping-cough	3	...	8	3	41	4
Mumps	7	16	4	11	23	15
Influenza	69	485	48	189	20	159
Typhoid fever	28	16	35	15	33	19
Para-typhoid fever	7	...	3	1	2	...
Diphtheria	10	1	7	1	11	1
Cerebro-spinal meningitis ... ..	...	3	3	18	9	29
Erysipelas	3	...	2	...	2	...
Ringworm	1	...	11	...	..	1
Scabies ... ..	...	...	...	1	...	1
Totals	404	1,010	338	801	351	802

Though every effort is made to make these returns as accurate as possible, it cannot be said that the figures quoted above are to be accepted as a true return of all the notifiable diseases occurring in the Colony. It is still quite a common occurrence to find that the first indication which the Department receives of the outbreak of an infectious disease is the death certificate, and under our existing legislation the return of this certificate is not compulsorily required under three months from the date of death. Where a number of cases occur in any one locality, or amongst a particular section of the community, then the returns are probably accurate, but sporadic cases occurring in rural areas, where perhaps the medical attendant is only consulted on the telephone, are often not reported. Apart from this, there is considerable slackness in reporting cases of infectious disease, and here the fault lies with the medical practitioner as well as with the householder, and a tightening up of these sections of the Public Health Act and the regulations framed under them, which deal with the compulsory notification of infectious disease, is being undertaken.

Chicken-pox is still very prevalent, both amongst whites and blacks, but shows a slight decrease from 1927. Measles, scarlet fever and whooping cough were markedly increased, especially amongst European children, and in this connection there has been a number of complaints received from both parents and teachers regarding the prevalence of infectious disease at schools in the larger towns and villages, and the serious wastage this imposes on the educational year. It is admitted that the incidence of the zymotic diseases of childhood are unduly high in our schools, the reason being that in this country, with its small European population scattered over a wide area and its system of boarding schools in towns and other centres, children are not exposed to infection till they arrive at school age, whereas in more crowded communities children have for the greater part passed through and recovered from these infectious diseases of childhood before arriving at the school period of their lives; this, however, is a social condition which will tend automatically to right itself in course of time. The infectious diseases as met with are usually of a mild type and the mortality low, only one death from measles, four from whooping cough and four from diphtheria being registered.

Diphtheria.—Though the incidence of diphtheria still remains low, it is slowly rising, and the introduction of the Schisk test in larger schools is under serious consideration, the chief drawback to its initiation being the difficulty of obtaining parental consent.

Cerebro-spinal Meningitis, though nowhere epidemic, shows a marked increase in the number of cases and deaths reported, especially amongst Europeans, and is causing some anxiety on that account; moreover, it is extremely difficult in most instances to trace the source of the infection.

Small-pox and Vaccinations.—After several years of almost complete immunity, small-pox again made its appearance in several districts in the Colony, being almost entirely confined to natives. The disease found its way by rail and road from Northern Rhodesia and Portuguese East Africa, where extensive epidemics amongst an incompletely vaccinated native population had suddenly broken out, and still continue. Owing to the complete freedom from small-pox which the Colony has enjoyed for the last five years, the regular vaccination of the native population had been allowed to drop somewhat into arrears up till 1926, when only 28,640 vaccinations were performed; fortunately, however, in 1927 this was speeded up, as it was recognised that there was a danger of the unvaccinated population increasing beyond the safety limits, and during this year 214,685 vaccinations were carried out, chiefly in the reserves, and including all native immigrants at ports of entry. This campaign was continued throughout 1928, when 265,609 vaccinations were done, more especially in those districts where small-pox had broken out, these districts being:—

Bulawayo town and district,
Nyamandhlovu native district,
Bubi native district,
Lomagundi native district,

of which Bulawayo, owing to the density of the population and the danger to the town, was naturally looked upon as the most serious. At no time did any of these outbreaks attain any serious proportion, and they were easily controlled by segregation and vaccination, whilst the disease itself was mild in type and the mortality low.

The vaccine which is used is obtained from the Union of South Africa by arrangement with that Government, and has proved in every way satisfactory. The cost to the Colony, however, is a heavy one, amounting in 1928 to £2,636, and it is a moot point, when we consider the adequacy of the supply and the excellence of the lymph, if it would or would not be more profitable to prepare the lymph we require in Southern Rhodesia for ourselves. This is a question which is now receiving consideration, due attention being paid to the capital outlay as well as to the annual expenditure which would be involved.

Enteric Fever.—Owing to the long drought, or for other unexplainable causes, there was a considerable increase in enteric fever during 1928, the rise being most marked towards the end of the year, and mostly amongst Europeans. There were 72 admissions to general hospitals, as compared with 50 in 1927. In Salisbury an outbreak affecting nine boys was reported from St. George's School, which was due, in the opinion of the Medical Officer of Health, to the pollution of a well used for the watering of a vegetable garden.

The following are the admissions to general hospitals for the last five years:—

Year.	Cases.
1924	42
1925	24
1926	50
1927	45
1928	72

Dysentery.—As is commonly found in drought years, dysentery showed a slight increase in the number of cases admitted to Government hospitals, there being 190 admissions on this account, of which 106 were Europeans and 84 natives. The deaths registered from this disease were 10 Europeans and 17 natives in 1928, as compared with 7 Europeans and 19 natives the previous year.

Malaria.—The Government Medical Officers, in reporting on the health of their several districts, have remarked on the absence of any serious malarial epidemic, or seasonal rise in the year under review. In spite of this, however, the admissions to general hospitals on this account rose from 545 Euro-

peans and 379 natives in 1927 to 726 European and 370 native cases in 1928, an increased admission rate of nearly 25 per cent. The deaths registered in the Colony on account of malaria also are increased from the previous year, and as far as Europeans are concerned are higher than any year since 1923.

The following table shows the admission rate per 1,000 of the estimated population, the deaths registered and the seasonal and average rainfall for the last seven years:—

Year.	Admissions to hospitals.	Admission rate per 1,000 of the population.	Deaths registered.	Rainfall.	
				Season.	Average.
1922	500	14.35	14	21.22	16.11
1923	953	26.32	49	22.23	39.16
1924	413	11.11	13	23.24	16.69
1925	765	19.68	21	50.03	40.42
1926	614	15.67	14	35.76	35.42
1927	545	13.09	15	20.55	21.81
1928	726	16.15	10	21.94	24.69

The rainfall was, if anything, below rather than above the average of previous years, and there were no climatic reasons which would account for a serious rise in the incidence rate of malaria in the country as a whole. Reference to Table 9 of the Appendix, which gives the admission rate to Government hospitals for the last two years, demonstrates that this increase was not confined to any one district, but was general, with the exception of Shamva and Sinoia. No particular reason can, therefore, be deduced except the distribution of the population. More new settlers are engaged in agricultural pursuits, and the proportion of rural to urban population has been materially altered in consequence. Another factor worthy of consideration is that the hospital population is tending to increase in relation to the rest of the community, and it is becoming much more common to send sick persons into the nearest hospital for treatment rather than nurse them in their own homes.

Importation and Distribution of Government Quinine.—As in previous years an extensive distribution of quinine was made to the public through the Post Offices, chemists and general dealers, at a charge of 3s. 6d. per bottle. The stock on hand on 1st January, 1928, was 5,000 bottles, each containing 100 five grain tablets, and a further consignment of 10,000 bottles was received in July. The total number of bottles issued from this Department during the year was 11,754.

Blackwater Fever.—Investigations into this obscure and interesting disease, which has always held a particularly evil significance for the pioneer in tropical and sub-tropical Africa, have been continued throughout the year by the Research Fellow detached from the London School of Tropical Medicine and Hygiene, and his results to date are embodied in an extremely interesting report which will be found in Part II. of this report. The line of research in this Colony into the ætiology and bio-chemistry of this disease, as originally agreed upon, has been carried through according to programme and is now nearing completion. Though no startling or theatrical discovery to catch the eye or intrigue the public has eventuated, the sum total of the last four years of patient research has been an added knowledge into the causes at work which lead up to that cataclysm which produces in certain persons a sudden and rapid hæmolysis and the excretion of its products in the urine, and which is known as hæmoglobinuria or blackwater fever, a knowledge which is of real value to the clinician, and has added still further links to that scientific chain which is slowly being forged, not only here, but in other countries where this disease prevails. There were 37 cases reported and 12 deaths registered from this disease in 1928, with 20 European admissions to hospitals, the mortality rate remaining much the same as in previous years.

CHART SHOWING NUMBER OF CASES OF MALARIA AND BLACKWATER FEVER, WITH RAINFALL IN RHODESIA.

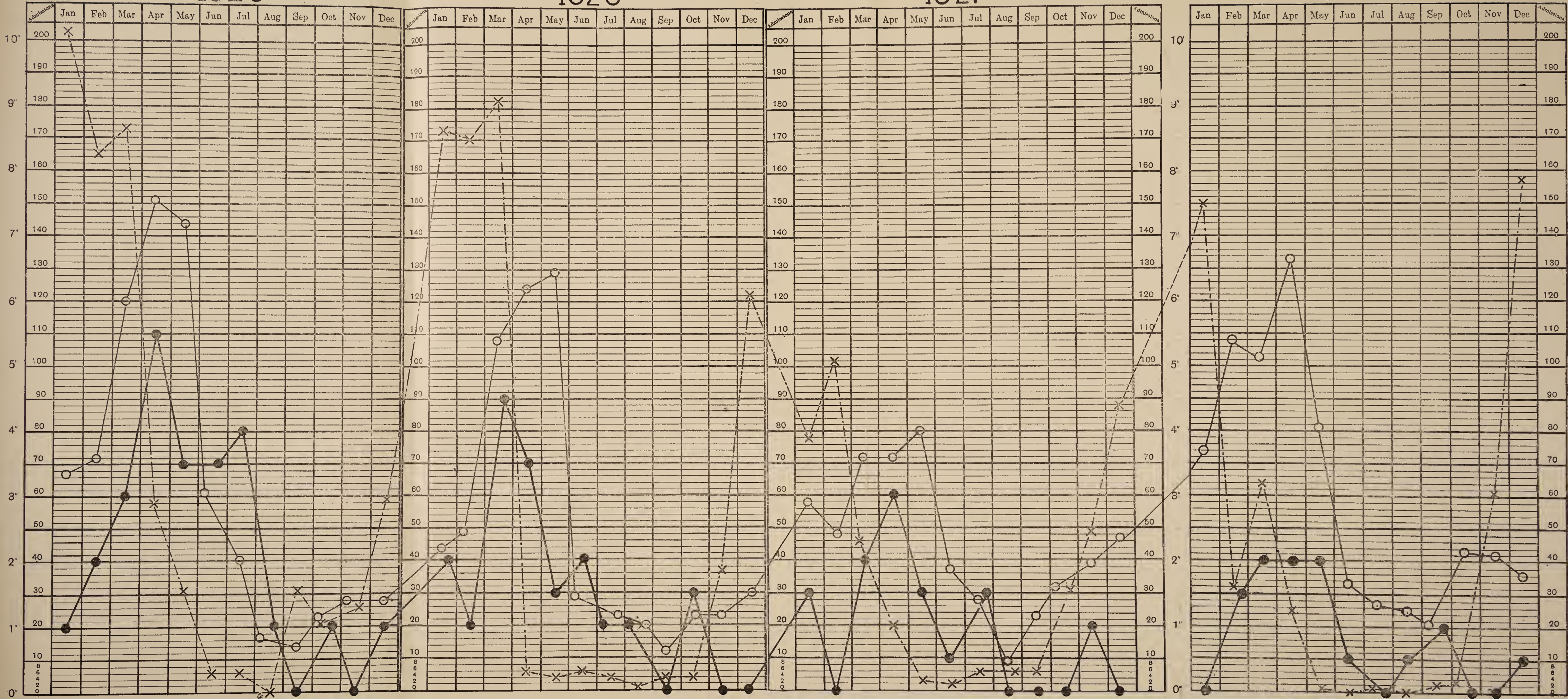
1925

1926

1927

1928

Rainfall in inches



Malaria
Blackwater fever
Rainfall

Blackwater cases multiplied by 10
to accentuate the curve

The following table gives the number of cases reported and the death rate per cent. for the last 15 years:—

Year.	Number of cases of blackwater admitted to hospital.	Number of deaths in hospital.	Mortality rate per cent.
1914	53	13	24.53
1915	62	16	25.81
1916	35	6	17.14
1917	48	13	27.08
1918	36	11	30.56
1919	37	7	18.92
1920	75	10	13.33
1921	53	6	11.32
1922	49	14	28.57
1923	64	14	21.88
1924	20	1	5.00
1925	51	13	25.49
1926	36	11	30.56
1927	36	13	36.11
1928	24	4	16.50
	679	152	22.20

Mosquito Survey.—The mosquito survey undertaken by the Research Entomologist of certain areas where malaria and blackwater are most prevalent was completed during the year. A special field of investigation was undertaken during the year which led to the discovery of the winter habitat of the *anopheles costalis*, and was of particular interest. Mr. Leeson's report is included with Dr. Ross's in Part II.

Pneumonia and Diseases of the Respiratory Organs show no diminution, in fact rather the reverse, for the admissions to general hospitals are generally increased, as is evidenced in the following table, which gives the admission rate for the last five years on account of pneumonia, broncho-pneumonia and bronchitis:—

	Pneumonia				Broncho-pneumonia				Bronchitis			
	Europeans		Natives		Europeans		Natives		Europeans		Natives	
	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths	Admis- sions	Deaths
1923	43	5	196	69	3	—	2	—	37	3	56	—
1924	69	16	381	117	12	3	25	4	47	—	48	7
1925	64	16	379	99	6	3	8	—	66	4	115	3
1926	82	18	898	296	5	1	12	3	70	4	91	5
1927	90	9	796	240	9	1	16	3	74	3	119	3
1928	109	22	1,003	295	20	3	16	10	71	5	82	3
	457	86	3,653	1,116	55	11	79	20	365	19	511	21

Pneumonia, especially of the post-influenza type, is the cause of by far the largest amount of sickness amongst natives in employment, and is an increasing cause of mortality amongst the European population. There were 42 European and 263 native deaths registered from this cause in 1928. The tobacco industry has been considered by some to be a fruitful agent in the increase of the pneumonia rate, and there is no doubt that both natives and Europeans alike who are engaged in tobacco grading warehouses have suffered in the last two years

to a greater extent than other forms of labour, and the conditions under which these labourers have to work may require closer observation, and, if necessary, legislative control.

Tuberculosis.—The demand for hospital accommodation for persons suffering from tuberculosis of the lungs, many in the third stage of the disease, continues about the same, and is a strain on general hospitals, which are really not suitable institutions for the nursing of these cases. The possibility of providing a sanatorium for these cases, with the addition of a hospital for chronic sick, was the subject of considerable correspondence and discussion during the year, and it was eventually decided to take no steps for the present.

The incidence of tuberculosis of the lungs, both in the European and non-European races, is rising, there being 61 European cases and 182 non-European cases treated in Government hospitals during the year, the deaths being 14 European and 116 native and coloured. The notification of non-European cases is still very imperfect, and as a rule it is only the later cases that come under observation. Phthisis in European immigrants is still too common, in spite of a tightening up of our immigration laws, which forbid their entry except under specified conditions, and then only non-active cases. Why Southern Rhodesia should be considered a health resort for persons affected with this disease it is hard to fathom, for in actual fact, under present day conditions, the very opposite is the case.

Undulant Fever.—There were 18 cases of undulant fever under treatment in general hospitals in the country throughout the year, as compared with 12 cases in 1927. The cause for this increase is unknown. The ætiology of this disease and its relationship to the disease known as contagious abortion in cattle has been the subject of further investigation on the research side of the Public Health Laboratory at Salisbury, and full reports of the work done in this direction will be published later.

Bilharzia.—This disease is probably much more prevalent, both amongst the European and non-European population, than is suspected. An experimental examination of the boys attending the Prince Edward School at Salisbury revealed the fact that 6.98 per cent. were suffering from this infection in varying degrees of severity. A similar trial examination of the Girls' School showed that only .19 per cent. of these girls were similarly affected. Similar examination of school children is to be extended to other schools in the country. Treatment by antimony tartrate has proved satisfactory, but the results obtained from emetine hydrochloride were not nearly so good. The extent to which bilharziasis exists amongst the native population in the reserves is not known; some years ago trial examinations of convicts, patients in hospital and recruits for the police, showed infection to be rare, but there is reason to believe that this may be altering, and further investigations are contemplated.

Ankylostomiasis or **Hook-Worm Disease** is not yet prevalent in Southern Rhodesia, though it is said to be spreading in certain parts of the Union of South Africa, notably amongst labourers on mines. Only four cases were reported last year, as compared with an equal number in the previous year. Attention was drawn last year to the relationship between this infection and a condition common amongst mine labourers of swollen and brawny legs, with considerable pain and loss of power. This has not been further confirmed, and is a subject which is awaiting closer enquiry and investigation.

Pseudo-Typhus Fever is the name now given to a febrile disorder which has within recent years been noted and described as especially affecting Europeans, and being most common in the central and eastern part of Mashonaland. It is characterised by fever, headache, marked depression and the presence of a rose-coloured rash somewhat resembling the rash of typhus fever. Dr. Ross, who has had exceptional opportunities of studying this disease, has pointed out that in most instances there is a definite history of an initial bite from some insect, but further investigation is called for here. The Weil-Selix re-action is negative, as is also the agglutination to *T. bacillus* and para-typhoid A. and B. and to the *micrococcus melitensis* and the *Bac. abortus* of Bang. The mortality to date has been nil, but further investigation into this disease, which appears to be increasing in frequency, is called for.

Leprosy.—In addition to the Leper Settlement at Gomohuru there are now two separate stations for the treatment of selected cases of leprosy voluntarily presenting themselves for treatment, the one being at Mtoko and the other at Mnene, in the Belingwe district, both being under the care of a medical missionary but supported by Government funds. The response to these voluntary treatment centres has been good, but it is too early yet to speak of results, the danger anticipated being that it may be difficult to induce patients under the voluntary system to remain sufficiently long under treatment. At Gomohuru there were 224 cases under treatment during the year, with 42 admissions and 21 deaths. Ninety of these persons were under various forms of intensive treatment, and the results were on the whole encouraging. At the annual inspection by the Statutory Commission three patients were released on probation and five others were set down to be released, provided the series of laboratory examinations proved negative to *Bac. lepræ*. This method of releasing on probation of non-infective or potentially cured cases is proving satisfactory, and by encouraging the infected to come forward is helpful in reaching the early cases, so much so that nearly 50 per cent. of the admissions this year were persons who voluntarily presented themselves for treatment.

Venereal Disease.—Particular attention is being devoted to the incidence of venereal disease amongst natives, including those in employment and in the reserves, and the following venereal clinics are now established and in full operation:—

Place.	Authority.	Cases treated.
Bulawayo...	Town Council...	358
Mnene } Masasa }	Belingwe... Swedish Mission	1,083
Ndanga ...	Government ..	14
Morgenster ...	D.R. Mission ...	620
Bikita ...	Government ...	250
Salisbury ...	Town Council	494
Gatooma ...	Government ...	468
Que Que ...	Globe and Phoenix Mine	88
Goromonzi ...	Government ...	23
Buhera ...	Government ...	46

In addition to the above, a certain number of cases were treated at general hospitals and at Police Camps and Native Commissioners' stations, and by the Government Medical Officers in the course of their duties. These amounted in all to 305, giving a total number of new cases applying for treatment of 202 during the year.

In and around the large towns, and on some of the mines, venereal disease is apparently becoming more prevalent, and is certainly more in evidence, owing to the fact that the medical examination of natives working in towns leads to an earlier recognition of any venereal condition in an active form; and, secondly, the natives themselves, stimulated by spectacular results obtained in early treatment with Salvarsan and other synthetic preparations of arsenic, are becoming eager to present themselves for treatment as soon as they recognise that they have been infected. In rural areas, and especially on the reserves, venereal diseases are not very prevalent on the whole; but there again in many areas the confusion with yaws has not yet been settled, and awaits investigation, especially in the more remote districts.

A strong movement was inaugurated this year in Bulawayo to induce the Government to undertake even more vigorous steps than it is doing to combat the spread of venereal diseases, especially in their application to the native, in contradistinction to the white man, and special stress was laid upon the need for a medical survey of the native population to ascertain to what extent they were infected. In theory such a course is excellent, but in actual practice it is one which has always been found impossible to carry out, except amongst very limited communities and in circumscribed areas. The most that can be done amongst wide-spread populations is to obtain a record from medical practitioners of cases treated by them, plus the cases that come for treatment to hospital clinics, and the ordinary method of arriving at a reasonable estimate of the presence of venereal disease from a record of the cases presenting themselves for treatment is at present the only reliable one.

The sum expended during the year on anti-syphilitic remedies amounted to £2,750, this being in addition to grants to local authorities and to missionary bodies, and the cost of upkeep of clinics supported entirely by the Government. The total sum expended on venereal disease was £7,081, this being considerably in excess of the provision allowed on the Estimates, and further authorities had to be obtained to allow of the increase in the expenditure.

The municipal clinics at Bulawayo and Salisbury are doing good work, but they and other urban local authorities are still averse to undertaking this service, even though the refunds from the Government are on a liberal scale. This took the line of a refusal to undertake the treatment of persons from other areas or districts, even when the whole cost of their maintenance and treatment was paid for by the Government. This is a controversial matter which is really applicable to all infectious diseases which may find their way to the towns and centres, often for medical advice and treatment, and one which will probably require legislation to settle. The control of venereal disease amongst native males in employment, especially under the pass system, presents little difficulty; but this does not apply to the infected women, many of whom live entirely on the proceeds of prostitution, and travel from mine to mine, farm to farm and town to town, frequently in couples or more, changing their names at various places and doing everything possible to elude detection, especially when they know that they have become infected and they know they are then liable to be arrested and placed under surveillance and treatment for protracted periods.

Yaws.—Syphilis amongst natives is extremely difficult, and in many cases impossible to distinguish from yaws, or frambœsia, especially in those native villages where this disease is endemic. In certain parts of the Colony yaws appears to be almost epidemic from time to time, and it is quite understandable in such cases that the lay public are led away with the idea that the great proportion of the native population in such an infected area is suffering from syphilis; nor is this confusion confined to the lay public alone, for with two diseases so closely resembling each other that even laboratory experiments are of doubtful utility in distinguishing between them, it is understandable that even medical men not conversant with the ætiology of yaws and its distribution and method of spread find it hard to make up their minds as to which of the two diseases they are dealing with. Treatment is in many respects similar, so in this confusion there is little risk of the patient suffering, but in countries where syphilis and yaws are both prevalent amongst the native races it is hard to return any accurate figures of the prevalence or distribution of either.

REPORT ON MEDICAL EXAMINATION OF NATIVES IN SALISBURY FOR THE YEAR ENDED 31st DECEMBER, 1928.

Number of medical examinations	12,536
Number of vaccinations performed	3,867
Representing 308.47 per thousand of total examined.	

		Case incidence per thousand examined.
Venereal disease	257	20.50
Percentage, 2.05.		

GOROMONZI CLINIC.

During 1928, 19 males and 4 females were treated for venereal disease at this clinic.

REPORT ON MEDICAL EXAMINATION OF NATIVES IN BULAWAYO FOR THE YEAR ENDED 31st DECEMBER, 1928.

Number of medical examinations	9,703
Number of vaccinations performed	7,437
Representing 766.46 per thousand of total examined.	

		Case incidence per thousand examined.
Venereal disease	37	3.81
Percentage, .4.		
Other infectious or contagious diseases		10

NATIVE VENEREAL HOSPITAL.

	From municipal area.		From other districts.	
	Males.	Females.	Males.	Females.
Admissions	244	18	88	8
Total admissions	358			
Voluntary patients	149 = 41.6% of admissions.			

REPORT ON MEDICAL EXAMINATION OF NATIVES IN UMTALI
FOR THE YEAR ENDED 31ST DECEMBER, 1928.

Number of medical examinations	2,768
Number of vaccinations performed	400
Representing 144.9 per thousand of total examined.	
	Case incidence per thousand examined.
Venereal disease	16
	5.78
Percentage, 0.58.	
Other infectious or contagious diseases	49

CHAPTER V.—HOSPITALS AND ASYLUMS.

There were 11,132 admissions to general hospitals in 1928, compared with 9,409 in 1927 and 8,995 in 1926; of these, 4,995 were Europeans and 6,137 native and coloured. European admissions increased by 764 and native and coloured by 959.

In 1927 the curve of European admissions was highest in December and lowest in February; in 1928 it is curious to find that in December there were least admissions, the maximum number being in October. As regards native and coloured, in 1927 October showed the highest and June the lowest number of admissions. In 1928 the maximum was in August and the minimum in May.

Patients units numbered 303,572, Europeans being 90,979 and coloured and native 212,593, as compared with 280,579 total units in 1927, of which 78,808 were Europeans and 204,771 coloured and native.

Salisbury Hospital.—The year 1928 shows continued expansion all round, with ever-increasing work in all departments. The number of European admissions increased by just under 20 per cent. Further accommodation is required to meet the continued pressure from patients requiring admission.

A private house was purchased by the Government in North Avenue, just opposite the hospital. In this, nurses working on night duty are accommodated, the building being intended to afford temporary relief until such time as a new wing to the nurses' quarters is built, and it will eventually house the Hospital Surgeon in charge of the hospital. The usefulness and efficiency of the operating theatre have been increased by the installation of a sialitic shadowless light. There were over 1,200 operations performed during the year; major 404 and minor 860. In the European section admissions were 1,834, as compared with 1,570 last year. In addition to these admissions, an ever-increasing number of patients is dealt with in the out-patients' department. Admissions to the native hospital were 1,618, as against 1,527 the previous year. The building of an Asiatic ward has now been sanctioned and will be completed during 1929. The beds set free by the immigration of the Asiatics to their own block will meet the increasing demand for accommodation from the Eur-African community.

With a view to the elimination of dust the approaches to the hospital have been coated with tar. The results have proved satisfactory.

Expenditure, £23,824. Revenue, £10,709.

Memorial Hospital, Bulawayo.—The number of admissions was 1,471 Europeans, as compared with 1,209 last year, and 1,730 natives, as compared with 1,306 in 1927, being an increase of 262 Europeans and over 400 natives. The total number of operations performed was 895, an increase of 111 over last year. An analysis of the figure 895 is as follows:—Europeans: Major 387, minor 387,

Natives: Major 56, minor 65. A new theatre block has been completed during the year, with proper provision for sterilisation. A new operating table and a sialitic shadowless light have been installed. The old theatre has been converted into an X-ray room, and the radiographer is now suitably equipped and accommodated. Trouble has been experienced for some years with the steam supply to the hospital, which to date has been derived from the Municipal Power Station, and has lately proved inadequate. A new boiler has now been purchased, and will, it is hoped, be installed and in working order early in 1929.

Expenditure, £18,660. Revenue, £10,120.

Umtali Hospital.—European admissions 457, as compared with 381 last year, and native admissions 354, as compared with 372 in 1927 and 521 in 1926. The number of native admissions continues to decrease. The number of operations performed continues to increase, the figures for the last three years being:—1926, 130; 1927, 173; 1928, 187. The new hospital has been begun, and should be completed towards the end of 1929. The extra accommodation to be provided is urgently required, especially as regards the native and coloured wards.

Gwelo Hospital.—There has been a large increase in the number of patients, especially Europeans. The figures are:—European admissions 440, as compared with 314 last year, an increase of over 25 per cent.; and native admissions 610, as compared with 535. Pneumonia and Spanish influenza accounted for 120 native admissions, or more than one-sixth of the total. Two hundred and six operations were performed:—Europeans: 38 major, 75 minor. Natives: 45 major, 48 minor. The principle of building a new native hospital has received Government approval. The actual construction of the building is, however, held up pending a settlement of the question of the site.

Fort Victoria Hospital.—One hundred and seventy-three white patients and 164 native and coloured were admitted during the year, as compared with 153 and 146 last year. Forty-six operations were performed—10 major and 36 minor. The hospital is not yet fully occupied, and advantage of this has been taken by transferring several chronic lung cases from Salisbury Hospital. In this way beds urgently required in Salisbury were set free. The admissions continue to increase year by year, and it will not be long before transfers of this nature will cease to be possible.

Gatooma Hospital.—Admissions of Europeans were 307, compared with 241 last year, and natives 766, as compared with 489 in 1927. This large increase in the number of native admissions is partly accounted for by the admission of venereal disease patients sent to the Gatooma clinic from Salisbury and elsewhere. The number of venereal disease cases admitted during the year was 325. January proved to be the heaviest month for both European and native admissions. Operations performed on Europeans numbered 45 during the year under review.

Shamva Cottage Hospital.—European admissions were 93, as against 97 last year; the native admissions 265, as compared with 196, an increase of 35 per cent. A total of 40 operations was performed.

Sinoia Cottage Hospital.—Admissions: 82 Europeans, as compared with 142, and 217 natives, as compared with 254. The new native hospital is now completed and is a great improvement. There were five operations.

Enkeldoorn Cottage Hospital.—Admissions have been: 82 Europeans, as compared with 69, and 102 natives, as compared with 113 last year. Ten operations were performed—one European and nine native. The erection of a new European hospital is well under way, and it should be completed and occupied in 1929. The Government Medical Officer at Enkeldoorn visits Umvuma fortnightly, Chilimanzi fortnightly and Buhera monthly, the cost of his transport being met from the funds of this Department.

Gwanda Cottage Hospital.—Europeans admitted numbered 45, as compared with 39 in 1927. Natives admitted showed a large increase at 243, as compared with 134 last year. The number of operations performed was seven. Several small additions to the kitchen and domestic offices have been carried out during the year, and improvements made to the Government Medical Officer's quarters.

Belingwe Cottage Hospital.—Admissions generally show a decrease; 11 as compared with 16 Europeans in 1927, and 68 as compared with 106 natives. No operations were performed during the year. The buildings at Belingwe are not very suitable for hospital purposes, but are still serviceable. There is a fully qualified resident nurse, and the hospital fulfils its purpose, which is that of a local relieving ward.

Ingutsheni Mental Hospital.—European admissions 29, native admissions 48. Daily average of patients treated: Europeans 50.6, natives 184. Total expenditure, £8,843. Total revenue, £1,542. The cost per caput per diem works out at the very satisfactory figure of 2s. 0½d. The total number of deaths during the year was as follows: Europeans 8, natives 31. No operations were performed. Increased accommodation for natives was provided during the year, and filled a long-felt want. A well-equipped and successful farm is run in connection with this institution. Open air work on this farm has been found to be a valuable adjunct to the successful treatment of native mental cases. In-door work for these is also provided in the manufacture of mattresses of horse hair and of coir. These are readily absorbed by the various Government hospitals, and are produced at a price well below that at which they can be purchased.

Statistics relating to the principal diseases treated in Government hospitals during the year and statistical information relating to the finance of these institutions will be found in the appendix to this report.

CHAPTER VI.—GENERAL.

The Health of the Native.

(a) **In Employment on Mines or Other Works.**—The native mining population has increased from 41,635 in 1927 to 42,940 in 1928, deaths from all causes numbering 850 or 19.8 per thousand, the highest death rate recorded since 1922.

The following table is a comparative statement of mortality amongst native labourers employed on mines since the year 1906:—

Year	Daily average number employed	Disease		Accident		All causes	
		Number of deaths	Death rate per mille per annum	Number of deaths	Death rate per mille per annum	Number of Deaths	Death rate per mille per annum
1928	42,940	756	17.61	94	2.19	850	19.80
1927	41,635	595	14.29	94	2.26	689	16.55
1926	41,671	598	14.35	91	2.18	689	16.53
1925	39,386	505	12.82	105	2.67	610	15.49
1924	41,286	665	16.11	89	2.16	754	18.26
1923	37,492	504	13.44	105	2.80	609	16.25
1922	35,718	681	19.07	86	2.40	767	21.47
1921	37,605	689	18.30	94	2.52	783	20.82
1920	37,669	599	15.90	75	1.99	674	17.89
1919	30,296	507	16.73	90	2.97	597	19.71
1918	32,766	3,629	110.76	88	2.69	3,717	113.44
1917	38,861	700	18.01	149	3.83	849	21.85
1916	40,420	911	22.48	172	4.24	1,083	26.73
1915	37,928	832	21.94	159	4.19	991	26.13
1914	36,100	897	24.85	135	3.74	1,032	28.59
1913	33,543	788	23.49	158	4.71	946	28.20
1912	34,494	1,073	31.11	163	4.73	1,236	35.83
1911	37,909	1,085	28.62	164	4.33	1,249	32.95
1910	37,826	1,682	44.47	182	4.81	1,864	49.28
1909	32,721	1,383	42.27	161	4.92	1,544	47.19
1908	30,865	1,397	45.26	132	4.28	1,529	49.54
1907	26,098	1,486	56.94	102	3.91	1,588	60.85
1906	17,381	1,163	66.91	157	9.03	1,320	75.94

The increased sickness and mortality rates amongst the native miners were almost general and not particularly confined to any one disease or group of diseases, though pneumonia showed the largest increase, there being 1,983 cases with 388 deaths, as against 1,628 cases the previous year with 313 deaths.

SOUTHERN RHODESIA.

MORTALITY ON MINES.

Annual Territorial Summary showing Mortality amongst Native Labourers for the Year ended 31st December, 1928.

Territorial classification	Average actual number employed at end of month.	D E A T H S .													Death rate per mille per annum.									
		Malaria.	Scurvy.	Syphilis.	Pneumonia.	Phthisis.	Other diseases of the chest.	Dysentery.	Diarrhoea.	Other intestinal diseases.	Heart disease.	Debility.	Influenza.	Other diseases.	Total diseases.	Accidents.	Totals.	Disease.			Accidents.		All causes.	
																		1923.	1927.	1928.	1927.	1928.		1927.
Southern Rhodesia	12,669	1	...	3	69	5	4	4	...	9	9	2	4	28	138	25	163	10.89	7.96	1.97	1.91	12.86	9.87	
Portuguese E. Africa	3,741	2	...	2	37	7	3	1	..	1	2	...	5	17	77	5	82	20.58	15.12	1.34	2.43	21.92	17.55	
Northern Rhodesia	12,555	18	2	2	100	16	5	4	1	13	2	2	7	32	204	24	228	16.25	16.82	1.91	2.01	18.16	18.84	
Nyasaland	14,015	15	2	7	168	17	11	7	1	8	10	1	8	51	306	40	346	21.84	16.44	2.85	2.78	24.69	19.22	
Other sources	723	3	...	...	14	1	...	3	...	2	...	...	2	6	31	...	31	42.88	27.93	...	...	42.88	27.93
Totals	43,703	39	4	14	388	46	23	19	2	33	23	5	26	134	756	94	850	17.30	14.15	2.15	2.24	19.45	16.39	

NOTE.—The figure 43,703 is the average of the number of natives actually employed at the end of each month, not of the daily average.

Although the numbers of native labourers in employment have increased, there has been an actual decrease in the number of employers, there being only 270 returned, as compared with 281 in 1927.

The number of employers rendering returns at the 31st December was as follows:—

	1925	1926	1927	1928
Mashonaland	156	138	112	102
Matabeleland	186	172	169	168
Total	342	310	281	270

The sizes of properties at the 31st December, 1928, are indicated by the following table:—

	1925	1926	1927	1928
Mines employing:—				
2,000 natives and over	2	2	2	4
1,500 natives and over	3	3	3	2
1,000 natives and over	4	5	5	2
500 natives and over	6	5	5	7
400 natives and over	2	1	2	6
300 natives and over	5	3	4	7
200 natives and over	6	12	13	13
100 natives and over	38	41	37	36
50 natives and over	72	66	61	61
25 natives and over	73	60	61	47
Under 25 natives	131	112	88	85
Total	342	310	281	270

DAILY AVERAGE NUMBER EMPLOYED, 42,940.

Disease.	Total sick.	Sickness incidence per mille per annum employed.	Total deaths.	Case mortality per cent.	Death rate per mille per annum employed.
Malaria	3,684	85.80	39	1.06	0.91
Scurvy	270	6.29	4	1.48	0.09
Syphilis	554	12.90	14	2.53	0.33
Pneumonia	1,983	46.18	388	19.57	9.03
Phthisis	76	1.77	46	60.53	1.07
Other diseases of the chest ...	1,767	41.16	23	1.30	0.54
Dysentery	227	5.29	19	8.37	0.44
Diarrhœa	629	14.64	2	0.32	0.04
Other intestinal diseases ...	242	5.64	33	13.64	0.77
Heart disease	37	0.86	23	62.17	0.54
Debility	232	5.40	5	2.16	0.12
Influenza	4,064	94.64	26	0.64	0.61
Other diseases	2,793	65.05	134	4.80	3.12
Minor ailments	11,461	266.90	...	...	...
Total diseases	28,019	652.52	756	2.70	17.61
Accidents, major	232	5.40	94	40.52	2.19
Accidents, minor	10,118	235.63	...	...	...
Totals	38,369	893.55	850	2.22	19.80

COMPARATIVE STATEMENT OF MORTALITY AMONGST NATIVES
EMPLOYED ON MINES, JANUARY TO DECEMBER, 1928.

Month	Average number employed	Disease		Accidents		Total	
		Deaths	Death rate per 1,000 permensem	Deaths	Death rate per 1,000 permensem	Deaths	Death rate per 1,000 permensem
January ...	36,749	33	0.90	8	0.22	41	1.17
February ...	40,042	41	1.02	2	0.05	43	1.07
March ...	39,776	34	0.85	8	0.20	42	1.05
April ...	40,094	30	0.75	5	0.12	35	0.87
May ...	41,139	38	0.92	7	0.17	45	1.09
June ...	42,057	43	1.02	4	0.10	47	1.12
July ...	41,987	56	1.33	6	0.14	62	1.47
August ..	41,592	69	1.66	5	0.12	74	1.78
September ...	42,914	72	1.68	10	0.23	82	1.91
October ...	42,995	88	2.05	6	0.14	94	2.19
November ...	42,570	94	2.21	15	0.35	109	2.56
December ...	43,807	116	2.65	4	0.09	120	2.74

The above table does not include returns received too late for inclusion in the monthly summaries.

(b) **In the Reserves.**—Considerably more attention has been directed lately to the health of the natives in the reserves and to the social and hygienic conditions under which they live, but progress is hampered from the start by our ignorance of their birth and mortality rates, and it is proposed to introduce compulsory notification of births and deaths in two selected native districts to remedy this defect.

This ignorance of essential vital statistics is common to the native territories in Africa, and consequently there is no comparative guide on which deductions can be based, and we continue at the mercy of those pious expressions of opinion from the enthusiast and the reformer, both of whom are proverbially prone to exaggeration.

One of the most fruitful subjects of discussion at conferences on native customs and habits is the presumed high death rate amongst infants at birth. It sounds a terrible thing to the ignorant to be told that 50 per cent. of the infants born never reach maturity, but this assumes a less formidable aspect when it is explained that up to the end of the nineteenth century out of every 1,000 children born in civilised Europe, 30 per cent. died in the first five years of life, especially when we know that the latter is a statement of fact and the former is only presumption.

It cannot be denied, however, that there must necessarily be much sickness and suffering which our modern methods of medical treatment would go far to relieve, and the question is just how and in what form this extension of health services amongst the native population can be effected. In many of the native territories much use is made of out-dispensaries under the control of educated native orderlies or dressers, who are visited by the European Medical Officer. This would appear to be a useful system to extend to this country were it not for the fact that it is difficult, if not impossible, to get native dressers of sufficient education and intelligence who could safely be permitted such independence of action.

On the other hand, the substantial financial assistance which is now offered to missionary organisations to enable them to develop and extend medical mission work amongst the natives has perhaps been conducive of the best results to date. These grants, which have now been co-ordinated and defined under a Government Notice, allow one-half of the salary of medical missionaries to be paid by the Government, with further grants towards the salaries of trained nurses, towards the establishment of hospitals and dispensaries and the supply of drugs, and towards the training of native male and female nurses and midwives. This policy has already encouraged the missionary bodies concerned to

extend their activities in a direction which, up till now, they have found difficult on account of lack of funds.

In addition, there are five dispensaries or treatment centres, established by the Government in native reserves, each under the control of a European official or trained nurse, and visited periodically by a medical man, being situated at Buhera, Bikita, Tjolotjo, Kezi and Wedza, the first three of which are doing excellent work, but the latter have so far proved disappointing.

The total number of native patients presenting for treatment at these Government dispensaries was 3,513, of which a large number were under treatment for yaws, especially at the native dispensaries at Bikita, in the Victoria district, and Buhera, in the Gutu area.

Maternity and Nursing Homes.—The terms under which Government grants-in-aid are paid to maternity and nursing homes have been yet further defined, and the following homes are now in receipt of these specified grants:—

The Lady Chancellor Nursing Home, Salisbury.

The Memorial Hospital, Rusape.

The Umtali Maternity Home.

The Maternity Home, Selukwe.

The District Nursing Committee, Sinoia.

The Loyal Women's Guild, Gwelo.

The Loyal Women's Guild, Fort Victoria.

The Loyal Women's Guild, Hartley.

The total grants paid amounted to £5,017, while in addition a sum of £5,150 was paid to nursing homes as contribution towards capital expenditure in the way of new buildings, extensions and additions.

Negotiations are now proceeding for grants to be paid for the inauguration of maternity homes at Bulawayo, Gatooma and Enkeldoorn, and it is probable that still further homes for women will shortly come into being.

The Beit Railway Trustees have most generously offered material assistance for maternity benefits, and a local committee, under the ægis of the Loyal Women's Guild, has been set up to consider claims and assess grants.

These concessions and grants now allay all apprehensions of possible financial loss, and no community, however small, need have any compunction in opening a central home for the admission and treatment of women in child-birth on account of a fear of lack of funds. Nursing homes in receipt of Government grants are on occasion visited and inspected by officials of this Department, but this is not systematic, and it is proposed to apply for regulations under section 113 of the Public Health Act of 1924, which provides for the registration and inspection of all nursing homes maintained for gain.

Child Welfare.—Child welfare centres have now been inaugurated at Salisbury and Bulawayo, and fortnightly clinics are held and attended by a professional nurse and one or more medical practitioners, who give their services gratis. Grants-in-aid towards the salary of a health visitor are also made by the Government and the local authority combined. So far the activities of these centres have been confined to the children of European parentage, but it is hoped that branches of these centres will be established for the assistance and help of the non-European races, whose need is as great, if not greater.

The clinics are chiefly devoted to the instruction of the mother in the care of the infant and young child, but the activities of the Child Welfare Societies embrace a wider range, not the least of these being the arranging and financing of annual holidays to the coast for necessitous cases.

A. M. FLEMING,

Medical Director.

PART II.

Report of the Medical Inspector of Schools
for the Year 1928.

The Medical Director,
Salisbury.

I have the honour to submit my annual report on the work of the schools medical service in Southern Rhodesia for the year 1928.

The children examined this year comprised:—

- (1) Children between nine years and twelve years of age;
- (2) New admissions;
- (3) Children who were found to be suffering from some defect at previous examinations;
- (4) Special cases recommended by teachers, parents or guardians.

The total number of children examined during the year was 3,606, and, in addition to this, a special investigation of dull and backward children was undertaken, which occupied four months of the year.

Dr. Gatchell left Rhodesia for England in April, and since this date the work has been carried on by Dr. Annie Clark.

A special notice is sent to parents inviting them to be present at the medical examinations, and it is disappointing that so few avail themselves of this opportunity. In order to obtain the most valuable results from the routine examination of school children, each child should be the subject of a consultation between parent, teacher and the Medical Officer, when all aspects of his past and present history can be considered, and some conclusion may be arrived at as to whether his environment and mode of life are the ones which will enable him to make the fullest possible use of the educational facilities which are provided for him.

Attendance of Parents.—

	1928.	1927.	1926.	1925.
Parents present ...	778 (21.57%)	837 (23.39%)	801 (18.41%)	771 (21.94%)
Parents represented...	919 (25.48%)	776 (21.68%)	1,572 (36.14%)	955 (27.17%)
Parents absent ...	1,909 (52.93%)	1,965 (54.91%)	1,976 (45.43%)	1,788 (50.88%)

Schools Visited.—Below is given in detail the number of children examined in the various schools visited:—

School.	Boys.	Girls.	Specials.	Total.
Emerald Hill Orphanage	23	31	...	54
Avondale Preparatory	72	49	...	121
Marandellas Public	10	10	...	20
Citrus Estate Farm School, Mazoe	2	3	...	5
Dandamera Farm School, Concession	2	4	...	6
Macheke Farm School	6	6	...	12
Lilfordia Aided Farm School	4	3	...	7
Primary School, Salisbury	53	86	1	140
Prince Edward Senior, Salisbury	42	...	6	48
Prince Edward Junior, Salisbury	257	...	14	271
Bindura Farm School	10	10	1	21
Arcadia Farm School	6	3	...	9
Shamva Mine School	33	22	...	55
Milton High School, "B," Bulawayo	44	...	...	44
Milton High School, Bulawayo	104	...	15	119
Primary School, Bulawayo	106	57	13	176
Turk Mine School	8	5	...	13
Lonely Mine School	31	19	5	55
Plumtree Public School	21	...	26	47

School.	Boys.	Girls.	Specials.	Total.
Plumtree Preparatory School	32	5	2	39
Hillside Preparatory School, Salisbury	14	13	2	29
Hatfield Preparatory School, Salisbury	26	23	6	55
Penhalonga Public School	11	5	3	19
Raylton, Bulawayo	30	17	...	47
Hillside Preparatory School, Bulawayo	18	13	...	31
Sauerstownship Preparatory School	17	13	...	30
Bellevue Preparatory School	14	12	...	26
Glenville Preparatory School	7	3	...	10
Convent, Bulawayo	35	81	9	125
Gwanda Farm School	12	11	...	23
Rusape Farm School	6	9	...	15
Rumbavu Park Aided Farm School	3	15	...	18
Parktown Preparatory School	15	16	...	31
Girls' High School, Salisbury ... ..	...	202	49	251
Girls' High School, Kindergarten	57	47	2	106
Chaplin High School, Gwelo	89	73	35	197
Wankie Public School	24	15	...	39
D.R.C. Orphanage, Daisyfield	36	32	11	79
Selukwe Public School	13	21	5	39
Convent, Gwelo	15	47	4	66
Victoria Public School	35	39	6	80
Marula Farm School	5	5	...	10
Gath's Mine School	5	6	...	11
Sinoia Public School	26	20	1	47
Que Que Public School	45	44	10	99
Eiffel Flats Public School	23	23	4	50
Gatooma Public School	30	36	6	72
Umvuma Public School	20	24	...	44
Eveline Girls' High, Bulawayo	21	162	17	200
Goedgedacht Farm School	1	4	...	5
Chipinga Public School	19	17	...	36
Mount Selinda Farm School	1	8	...	9
Umtali High School	82	94	48	224
Convent, Salisbury	41	99	6	146
Hartley Public School	25	30	8	63
Old Umtali Farm School	6	6	...	12
	1,693	1,598	315	3,606

Children Examined.—Of the 3,606 children examined during the year:—

620 (17.16%) were recommended for medical or surgical treatment.

1,028 (28.34%) were recommended for dental treatment.

Action Taken on Previous Recommendations.—The number recommended for treatment in 1927 were as follows:—

Medical or surgical treatment 928

Dental treatment 1,170

Action taken on these recommendations was found to be as follows:—

Vaccinations 346

Dental 369

Medical 2

Surgical 98

Total 815

Percentage, 38.84.

The surgical treatment included 67 cases of tonsillectomy, and 10 children with defective vision were provided with suitable glasses.

Percentage of Recommendations Acted on in Previous Years.—

1925.	1926	1927.
52.24%	83.65%	38.84%

Most of the conditions which are recommended by the Schools Medical Officer for treatment are brought to the parents' notice for the first time at the medical inspection, and it is unlikely that these defects would receive attention were it not for this routine examination. That this advice is appreciated by the parents is evidenced by the large percentage of cases in which treatment has been obtained.

Physical Development.—Cases of malnutrition, as might be expected in this country, are comparatively rare. Of the 3,606 children examined, 169 (4.63 per cent.) were below the normal in nutrition, but only 2 cases were suffering from marked malnutrition; 26 (0.72 per cent.) were suffering from adiposity. Many of the children are poorly developed physically, and this is especially marked in those schools where no physical training is provided. The following conditions were noted:—

Flat chest with poor expansion	552
Deformities of thorax	58
Dorsal scoliosis	150
Lordosis	2
Kyphosis	216
Winged scapulne	49
Genu valgum	33
Pes planus	4

Cleanliness and Condition of Skin.—Very few cases of marked uncleanness of the skin are found during medical inspections, though, as has been pointed out in previous reports, the degree of cleanliness attained on these occasions cannot be taken as an invariable indication of the degree of cleanliness on ordinary days.

The following are details of skin conditions noted during the year:—

Uncleanliness	35
Pediculi carpitidis	8
Impetigo	16
Veld sores	15
Scabies	15
Tinea	6
Multiple warts	10
Acne	4
Furunculosis	5
Seborrhœic dermatitis	2
Ichthyosis	1
Eczema	1
Psoriasis	1

Clothing.—The function of clothing, which is primarily to protect the body against the elements, is apt to be lost sight of. In a sub-tropical country such as Rhodesia the ultra-violet or actinic rays are more concentrated than in temperate zones, and these rays have a definitely harmful effect if they are excessive. It has been found by experiment that over-stimulation by these rays leads to a condition of restlessness, loss of appetite, insomnia, loss of weight and a feeling of irritability. In sunny countries the body protects itself from these effects by producing a layer of pigment in the skin, which acts as a screen to ultra-violet light. In the absence of pigment it seems reasonable to assume that as large an area as possible of the body should be covered, and that bare arms and legs, low necks, etc., are not advisable for white children. These rays are also very harmful to the eyes, and for this reason it is very important that protective headgear should be worn. Heat rays as well as ultra-violet rays are harmful to the human body, causing symptoms of exhaustion, lassitude and mental inertia, and children should therefore be protected from the heat by wearing light, loose and washable clothing. Even the colour of clothes is of some importance, for it has been shown that a black fabric will hold more heat than a white fabric of the same texture. The ultra-violet rays are unable to penetrate red, yellow and green fabrics, so probably the best combination of colours to protect such delicate structures as the brain would be a white fabric lined with green.

In Rhodesia the usual costume worn in the schools for girls is a blue serge tunic, black woollen stockings and a wide-brimmed straw hat. The boys wear cotton shirts and shorts and some nondescript headgear which rarely shades the eyes. I would suggest that washable materials should always be used as a matter of routine, and that they should be washed frequently. The serge tunic is calculated to hold the heat and is not a good colour; red, green or yellow cotton would be preferable. Light cotton stockings are better than black cashmere—they are more economical, and should be washed daily. The straw hats used give doubtful protection to the thin and delicate cranium of a child. Probably a standard double terai of felt would be more suitable for both girls and boys.

During the cold season clothing is apt to be excessive. The child is warmly dressed for the early morning, and in the middle of the day becomes over-heated, so that its woollen garments cling to it like cold and clammy poultices as the temperature cools again towards evening. In my opinion cellular underwear which does not hold moisture as wool does is the best material for school use, and a woollen coat or jersey can be worn during the colder parts of the day.

Frequent washing is a thing which I am convinced should not be neglected in a sub-tropical country, both of clothes and persons. Every child sweats freely during the day at games and exercises, and it is most necessary that this sweat, which contains waste matter and poisons, should be removed. I have been surprised to find that in some schools a daily bath is not provided, and there is an unfortunate tendency to economise the laundry work.

Dental Diseases and Defects.—Of the 3,606 children examined, 779 (21.60 per cent.) were found to have from one to four decayed teeth, and 205 (5.68 per cent.) were found to have more than four decayed teeth, making a total of 1,023 (28.36 per cent.) cases requiring dental treatment. A full report of the dental conditions is given by the Schools Dental Surgeon.

Nose and Throat Defects.—The number of children suffering from enlarged tonsils was 1,271 (35.24 per cent.). Of these, 332 were noted as being markedly enlarged and 939 as slightly enlarged; 273 (21.47 per cent.) were recommended for surgical treatment.

Percentage of Enlarged Tonsils in Previous Years.—

1925.	1926.	1927.	1928.
25.29	27.13	26.9	35.24

The increased percentage this year is probably accounted for by the age group under consideration, since between nine and twelve years is the time when children are most often found to be suffering from lymphatic hypertrophy. Operation was recommended only in those cases where definite symptoms were produced, such as toxæmia, deafness, frequent sore throats, etc. Enlargement alone was not taken as an indication for surgical interference. The cause of this high percentage of tonsillar hypertrophy is uncertain.

Theories which have been advanced are:—

(a) Cold and damp climatic conditions, resulting in frequent catarrhal infections. This obviously is not applicable to Rhodesia.

(b) Chronic mechanical irritation by dust particles, etc. This might presumably be an exciting cause in many parts of the country.

(c) A deficiency of iodine. I have not been able to obtain figures of the iodine content of the water, but as a general rule it is low at high altitudes and in places far removed from the sea. In the present state of our knowledge, however, it is not possible to assert that the children are suffering from iodine deficiency, though there is fairly strong presumptive evidence for such a view.

(d) Dietetic errors. It has been shown that a lack of Vitamins A and D in the diet predisposes to all kinds of catarrhal conditions, and this may possibly be a factor in some cases.

(e) A chronic low grade infection passed directly from one child to another. With a view to investigating this theory, the percentage of cases has been worked out for various schools, where more than 40 children were examined as follows:—

School.	Number examined.	Enlarged tonsils.	Percentage.
Avondale Preparatory, Salisbury	121	61	50.41
Eiffel Flats	50	25	50.00
Raylton, Bulawayo	47	23	48.93
Convent, Bulawayo	125	59	47.20
Daisyfield	79	37	46.82
Victoria	80	35	43.75
Girls' High, Kindergarten, Salisbury	106	46	43.39
Gatooma	72	31	43.05
Selukwe	39	16	41.02
Primary, Salisbury	140	55	39.28
Umvuma	44	17	38.51
Girls' High, Salisbury	251	93	37.05
Chaplin High, Gwelo	197	73	37.05
Hartley	63	23	36.50
Que Que	99	36	36.36
Primary, Bulawayo	176	61	34.65
Sinoia	47	16	34.04
Prince Edward Senior	48	16	33.33
Eveline High	200	63	31.50
Umtali High	224	71	31.69
Milton, Bulawayo	119	36	30.25
Lonely Mine	55	17	30.90
Prince Edward Junior	271	81	29.88
Shamva	55	16	29.09
Convent, Gwelo	66	19	28.78
Convent, Salisbury	146	42	28.76
Milton "B"	44	12	27.27
Hatfield Preparatory	55	14	25.45
Emerald Hill	54	12	22.22
Plumtree Preparatory	40	7	17.94
Plumtree	47	8	17.02

It will be seen that there is considerable variation in different parts of the country, ranging from 50 per cent. to 17 per cent., but more investigations will be necessary before these figures can be interpreted. There are not in this list sufficient well-defined differences to warrant the adoption of the infection theory. That there is some special factor in Rhodesia related with the condition of enlarged tonsils is obvious. The percentage given by the Chief Medical Inspector of the Board of Education in England for the year 1926 is 10 per cent. of all the school children examined—a figure very much lower than that obtained in this country.

Defects of Vision.—

Defective vision	257
Conjunctivitis	376
Blepharitis	38
Trachoma	2
Strabismus	39
Lateral nystagmus	2
Exophthalmus	1

The total number of children tested was 3,374, of whom 257 (7.61 per cent.) were found to be suffering from defective vision. In 87 of these cases the defect had already been corrected by the provision of suitable lenses. The percentage of eye defects shows but slight variation from year to year.

Percentage of Defects of Vision.—

1926.	1927.	1928.
6.99	8.50	7.61

In a variable proportion of these cases, the defect noticed is comparatively slight and is probably due to fatigue, ill health or nervousness. Children showing any degree of visional defect should receive special consideration in the school classes. They should sit in the front row of the class, and should not be allowed to stoop over their work. Girls should do no sewing, and both girls and

boys should be prohibited the use of books with small print or writing of any sort other than a bold, large-lettered hand. They should read or write in large type, preferably for periods not exceeding 20 minutes without a break, and in myopic cases, home lessons of any sort should be prohibited.

Illumination of class-rooms is important for all children, the chief point for consideration in this country being the avoidance of glare. Illumination in any room should be uniform and unshaded light, such as direct sunlight from the windows, or shining surfaces will be found to be a source of irritation and distraction, due to uneven stimulation of the retina. For this reason, windows should be shaded, furniture and walls should avoid bright varnish and have a dull, non-reflective finish. Blackboards should have a dull matt surface, and unglazed paper should be used for reading and writing.

Defects of Hearing.—Deafness was found in 49 children, due to the following causes :—

Otitis media—

Right ear (active)	4
Left ear (active)	1
Right and left ears (active)	4
Right ear (not active)	6
Left ear (not active)	3
Right and left ears (not active)	5
Otto sclerosis	4
Cerumen	22

Respiratory Diseases.—

Bronchitis	28
Asthma	9
Pleurisy	1

Chronic respiratory diseases are rare in this country, and no case of active tuberculosis was diagnosed during the school inspections.

Heart Disease and Disorders of the Circulation.—

Organic—

Mitral incompetency	19
Mitral stenosis and incompetency	1
Cardiac dilatation	1
Total	21

Functional—

Tachycardia	16
Brachycardia	1
Anæmia	202
Arythemia	105
Functional bruits	251
Total	575

Organic Heart Disease may be congenital or acquired. It has been estimated that about 86 per cent. of the cases of organic heart disease in children is a sequel of rheumatic fever, and as this disease is comparatively rare in Rhodesia, it is not surprising that very few heart lesions are recorded. Some of these cases are the result of diphtheria and others of acute rheumatism contracted in other countries. Mitral incompetence, if slight, is not incompatible with a long and useful life. The most important sign in the prognosis of these cases is the re-action of the heart to exercise, the gravity of the disease being proportional to the amount of distress produced on exertion.

Functional Heart Disease is often transient, and is comparatively unimportant. The anæmic heart with flabby musculature, “tic-tac rhythm” and soft mitral systolic murmur is very common in children who have suffered from malaria, and becomes normal as the child’s general condition is improved. Other causes of functional cardiac disorder include :—

- (a) Toxæmia from septic foci, such as carious teeth, septic tonsils and alimentary toxæmia.
- (b) Nervous, endocrine and thyroidal conditions.
- (c) Malnutrition.
- (d) Excessive exertion in debilitated children, such as cycling, swimming or walking long distances to and from school.

Malaria.—Of the 3,606 children examined, 1,602 (44.55 per cent.) gave a history of malaria. It will be seen from a comparison with the records of previous years that the malarial incidence is decreasing.

Percentage of Children giving a History of Malaria.—

1924.	1925.	1926.	1927.	1928.
51.27	60.61	58.33	38.01	44.54

Enlargement of the Spleen.—

	1928.	1927.	1926.
Spleen tender	9 (0.24%)		
Spleen slightly enlarged	256 (7.09%)		
Spleen markedly enlarged	154 (21.27%)		
Total	419 (11.61%)	(10.59%)	(13.52%)

Blackwater Fever.—A history of blackwater fever was given by 32 children, one of whom had four attacks. It is not generally recognised that malaria is a preventable disease, and that if certain simple precautions were taken a very large amount of ill-health among school children might be eliminated. It is surprising to find how few of the children in a malarious district habitually sleep under a net, and there is much prejudice against the use of quinine as a prophylactic. The effect of malaria on a child is serious, for in addition to anæmia and splenic enlargement, the digestive system suffers, constipation is the rule and the congestion and sluggish action of the liver gives rise to so-called “bilious attacks,” loss of appetite and nausea. Temporary or prolonged change in the mental condition is often a result of this infection, sometimes manifesting itself as a mental confusion, with dulness, apathy and loss of memory, sometimes in a condition of restlessness and anxiety.

Bilharzia.—During the year 21 cases of bilharzia were recorded. The incidence of this disease in the country is uncertain, since in many cases the parasite may remain latent for a considerable time. An investigation has therefore been started in order to discover the number of carriers throughout the country and if possible to trace the source of the infection. Bacteriological examinations have been undertaken, with the following results:—

	Examined.	No. of positive cases.
Salisbury—Boys	616	43
Salisbury—Girls	508	1
Umtali—Girls	200	nil

Infectious Diseases.—A history of infectious diseases was obtained from the following children:—

Measles	1,815
Whooping cough	1,439
Chicken-pox	1,194
Scarlet fever	79
Diphtheria	36
Mumps	362
Enteric fever	47
Dysentery	46
Pneumonia	83
Small-pox	1
Malta fever	4
Influenza	25
Dengue fever	3
Rubella	10
Infantile paralysis	9
Cerebro-spinal fever	4
Rheumatic fever	14

Vaccination.—In consequence of the native outbreak of small-pox in the early part of the year, special attention has been given to the question of vaccination. All teachers were instructed that unvaccinated children must be excluded from school unless official exemption had been obtained from a magistrate; and the school medical officers have spent much time in interviewing parents and explaining the necessity of this protective measure to them. It was found that genuine conscientious objectors were in a small minority, and that neglect in availing themselves of this precaution was generally due to apathy and indifference. On the offer of the school medical officers to perform that operation at the schools, without worry or inconvenience to the parents, very little opposition was encountered, and, with few exceptions, all school children are now satisfactorily vaccinated.

Of the 3,594 children examined, 3,346 (93.09 per cent.) had already been successfully vaccinated, and 248 (6.90 per cent.) were found to be unvaccinated, or to have no visible vaccination marks.

Infectious Diseases in School Hostels.—During the year various mild epidemics of measles, chicken-pox, influenza, whooping cough, etc., have occurred in the school hostels. School epidemics are probably unavoidable in a sparsely populated country such as this, since the majority of children never come into contact with these infections during their early years, and so fail to acquire the immunity which is produced by repeated small doses of the virus. In a more thickly populated country many children will be relatively unsusceptible to these diseases when they come to school, either because they have survived an attack in their early years, or because they have become accustomed to dealing with the infection, and the risk of school epidemics will therefore be diminished. Much might be done, however, to reduce the incidence of infectious diseases by stricter attention to general hygiene, such as the avoidance of common towels and drinking cups, careful supervision of sanitary arrangements and cleanliness. A knowledge of the early symptoms of common diseases is invaluable to a teacher, who is thus in a position to exclude early suspected cases from the class-rooms.

School Buildings.—During recent years schools and school hostels of a very high order of excellence have been built in many parts of the country. Many of the smaller schools, however, still leave much to be desired, both as regards structure and sanitary conditions.

Drinking Water.—The provision of abundant drinking water is a necessity for children. A covered receptacle containing boiled water is provided in almost every school, with two or three mugs, which are used indiscriminately by every child. In some of the smaller schools a canvas water bottle is supplied, and the children apply their lips directly to its opening. It must be recognised that this mediæval custom of using a common cup is a potential source of danger, and that epidemics of measles, scarlet fever and diphtheria might readily arise from such a habit. In the smaller schools it would be a simple matter for each child to bring his own cup (this is already done at Macheke), and in the larger schools other methods are available, such as the "bubble fountains" or jets which are so common in American and European schools.

Ablution.—Personal cleanliness of pupils should be insisted on by the teachers. The habit of cleanliness acquired in school ages will remain through life and will do much to prevent the spread of disease. Wash-hand basins are provided in most of the schools in this country, but the supply of water is often a difficulty, as in many cases it is carried by hand for some distance. Soap should be supplied, and this should be of a reasonably good quality, as a cheap and strongly alkaline soap will cause dry scaly patches to appear on the children's faces. The common towel is an abomination and is a frequent cause of the spread of conjunctivitis and impetigo. Paper towels are now largely used in America and Canada.

School Diet.—During the year the calorific value of diets at various school hostels was investigated, and was found to vary between 2,350 calories per day (Prince Edward School) and 3,650 calories per day (Bulawayo Technical, Langdon House, and Milton Senior Schools), giving an average of something over

3,000 calories per day. This is a generous allowance, and where there are small children to be catered for it is probably in excess of what is actually required.

The proportions of protein, fat and carbohydrate worked out for the average school diet of 2,920 cal. give—

Carbohydrate	1,671.4 cal.	} 2,920 calories.
Fat	841.1 cal.	
Protein	401.3 cal.	

It will be observed that the fat and carbohydrate together form the greater part of the diet, and that the protein element is less than one-fifth of the total calorific value. The faults in this diet are therefore a deficiency of protein and an excess of carbohydrate.

An alternative diet was suggested as follows:—

Carbohydrate	1,105.9 cal.	} 2,401.8 calories.
Fat	838.2 cal.	
Protein	444.5 cal.	

In this diet the protein approximates to the requisite proportion of one-fifth of the total calorific value, and the carbohydrate and fat are reduced. This result is obtained by increasing the milk and egg ration, by substituting brown bread for white and by reducing the quantity of sugar and jam which is consumed. It was also shown that the supply of fresh fruit and vegetables was inadequate in many cases, and it was suggested that in the revised diets fruit should be provided daily.

ANNIE CLARK,
Assistant Medical Inspector of Schools.

26th January, 1929.

Report of the Schools Dental Surgeon for the Year 1928.

The Medical Director,
Salisbury.

I have the honour to submit my report on the dental inspection and treatment of school children in the Colony for the year 1928.

Since 1926, when the schools dental service was started, an almost complete circuit of the country has been made. Dental inspections have been carried out and treatment given in every district in the Colony where dental facilities are not otherwise available. The lapse of time, however, which must occur between the first and second visits to any one school is, of course, as has been pointed out before, much too long. Dental disease in children manifests itself so early in life and is so rapid in its progress that constant supervision and inspection are a necessity in order to check its advance. The appointment of an additional dental surgeon will assist in overcoming this disadvantage.

The year's work has embraced the schools situated in the Marandellas, Umtali, Melsetter and Plumtree districts. Inspections have also been carried out in the Salisbury area.

Schools Visited.—Of the schools enumerated below, the Primary School, Salisbury, and Emerald Hill Orphanage were subjected to inspection visits only, under the scheme of treatment undertaken by Salisbury dental surgeons. The following list shows the schools visited during the year, with the approximate number of children in attendance at each school:—

School.	No. in attendance.
Marandellas Public School	27
Looe Farm School	11
Macheke Farm School	15
Rusape Farm School	14
Diana Farm School	10
Makoni North Farm School	19
Cheshire Farm School	23
Penhalonga Public School	22
Riversdale Farm School, Headlands	2
Chinika Farm School	12
Primary School, Salisbury	165
Emerald Hill Orphanage	64
Ruwaka Farm School	11
Johannesrust Farm School	24
Melsetter Public School	50
Chipinga Public School	48
The Meadows Farm School	12
Mount Selinda Farm School	10
Hatfield Preparatory School	87
Plumtree Preparatory School	54
Plumtree Public School	198
Attendance at Gwelo Cadet Camp.	

Dental Treatment of Poor Children Attending Salisbury Schools.—The problem of the treatment of children attending the Primary School, Salisbury, and those resident in the various orphanages and homes in the town, was one which came up for discussion during the year 1926. It was felt that children of needy parents should be put in a position in which they could obtain dental treatment at any time during the year if the necessity arose. To this end, in February of the year under review a meeting of the private dental practitioners, the Medical Director and the Schools Dental Surgeon was arranged to solicit the help of the locally practising dental surgeons in this matter. The outcome of

the meeting was that the private dental surgeons agreed to accept the onus of treating free of charge all children attending the Primary School and those living in the Emerald Hill Orphanage and the Rhodesia Children's Home, and any other children whose parents in the opinion of the Magistrate were in necessitous circumstances.

Special times have been set aside by the practitioners in which to perform these services. With regard to the Primary School and the Emerald Hill Orphanage, the plan decided upon was that the children at these schools should be inspected by the Schools Dental Surgeon, and that he should submit a list of those requiring treatment to the Principal or Matron concerned, thus placing the latter in a position to send the children for treatment at the times arranged. I should be glad to take this opportunity of thanking the practitioners concerned for their courtesy and generosity in undertaking this work, for by their help I have been liberated to visit the districts and treat children in country schools where no dental practitioner is resident.

Numbers of Children Inspected, Treated, etc.—

Number of children in attendance	868
Number of children inspected	765
Number of children treated	369
Number of children having carious teeth	555
Number of children having deposits of salivary calculus ...	121
Number of children requiring treatment for any cause	644

Incidence of Dental Disease.—A perusal of the figures for the year shows that out of 765 children examined, 215 were free from dental caries. Thus 71.9 per cent. were suffering from this disease alone to a lesser or greater extent. The average amount of caries and sepsis per child of those affected was as under:

492 children had between them—

1,586 teeth carious; and
381 teeth septic and carious.

Thus each child had on an average 3.96 teeth affected either by caries or sepsis.

Details of Treatment.—1. Fillings.—The number of filling operations performed during the year was 982. They can be classified as under:—

(a) Fillings in Permanent Teeth—

Performed with local anæsthetic	140
Performed without local anæsthetic	714

(b) Fillings in Temporary Teeth—

Performed with local anæsthetic	1
Performed without local anæsthetic	109

(c) Root Fillings 18

2. Extractions.—The number of extractions performed during the year was 624. They are classified as under:—

(a) Permanent Teeth—

Extracted under local anæsthetic	168
Extracted under nitrous oxide gas ... ..	...
Extracted under general anæsthetic	16

(b) Temporary Teeth—

Extracted under local anæsthetic	396
Extracted under nitrous oxide gas ... ..	...
Extracted under general anæsthetic	44

3. Scaling Operations.—Sixty-eight children received treatment for removal of salivary calculus. In some cases several treatments were required. A total of 88 scaling operations was carried out.

4. Gingivectomy.—In 5 cases removal of inflamed gingival margins was carried out in order to lessen the liability to food stagnation and sepsis.

5. **Anæsthetics.**—General anæsthetics were administered for the extraction of teeth in 10 cases; in 8 cases by the district surgeons and in 2 cases by the Assistant Medical Inspector of Schools, who happened to be in the district. In all other cases local anæsthetics were employed.

Lectures.—Again this year through the medium of the Women's Institutes it has been possible to meet numbers of parents in the various centres and to address them on dental hygiene. These lectures have been well attended, and the personal supervision which the parents are able to exercise over their children has had a beneficent influence from the point of view of oral cleanliness. There is still room for improvement in this respect, however. A lecture was given also to members of the teachers' vacation course, which was held in Salisbury in June.

Diet and Prevention.—The question of diet and its relation to dental caries has for many years occupied the attention of scientists and investigators throughout the world. Certain foods, by their fermentation in and around the teeth, do undoubtedly produce dental caries, but this in itself is not the whole factor concerned. Recent work in England has shown that, given even an ample and so-called self-cleansing diet, dental caries in children still develops, though in a lesser degree. When, however, this diet was augmented by one of the fat soluble vitamins (D), administered internally in the form of radiated ergosterol, it was found in most cases that not only did no further caries develop, but that that already present was hardened and rendered inactive. In a country such as Rhodesia, where there is abundant sunshine, such supplementary radiation should prove unnecessary, but an increased resistance to caries might quite easily be obtained by supplying the calcium fixation vitamin in the form of cod liver oil, eggs and extra fresh milk. This brings us to the point where we must consider whether an adequate quantity of calcium is being supplied to the blood stream in food. It is useless to provide calcium fixation factors if there is an insufficiency of calcium itself in the diet. Milk is known to be the most fruitful source of calcium amongst the common foods, and a full daily supply should be maintained up to adolescence.

In previous years the incidence of caries amongst Dutch children in Rhodesia has been found to be slight compared with that in children of other European stocks. The figures for 1928 showed that only 46.92 per cent. of Dutch children required treatment for caries, as against 74.6 per cent. of other Europeans. In the Melsetter and Chipinga district, which is almost entirely Dutch, however, the position was very different. Out of 155 children examined for caries in this district, as many as 88.97 per cent. were found to be affected.

It would be interesting and, I think, of great assistance in deciding upon preventive measures against dental caries if research into the calcium content of the milk and other foods could be carried out in the various districts throughout the Colony, and the findings of the investigators compared for such districts, as, for example, Inyanga and Melsetter.

CYRIL FLETCHER.

Schools Dental Surgeon.

24th January, 1929.

Report of the Director, Public Health Laboratory, for the Year 1928.

The Medical Director,
Salisbury.

Pasteur Institute.—There has been no undoubted rabies in Southern Rhodesia since 1913. The fixed virus strain, however, is always kept going by rabbit inoculations every month, and courses of treatment are prepared and stored throughout the year in sufficient quantity to meet any requirement from surrounding territories. During the year one European patient from Northern Rhodesia was treated at the Institute, and three courses of treatment were sent to Nyasaland for patients bitten there.

Analysis of Work done.—(A) *Research.*—The Rhodesian Research Fellow has continued his work on blackwater and undulant fever.

The Research Entomologist has continued his mosquito survey of the Colony; the Government Analyst has made chemical investigations when required; on the routine side practically no systematic research was possible owing to pressure of other work, including a bilharzia survey of school children, which was instituted at the request of the Medical Inspector of Schools.

(B) *Routine.*—The number of examinations shows the usual yearly increase, the figures for the past six years being as follows:—

1923.	1924.	1925.	1926.	1927.	1928.
1,457	1,714	2,309	3,464	5,529	6,747

There has been no increase of the European routine staff during these six years.

The specimens sent came from the following localities:—

Southern Rhodesia.—

(1) Salisbury and district	6,373
(2) Outside districts	366

Other Colonies	4
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It will be seen that if branch laboratories were started at Bulawayo and Umtali a very much larger number of specimens could be examined.

The following table shows the methods employed in examination of specimens:—

Bacteriological and Protozoological—

	1928.
Microscopical examinations	1,365
Agglutination tests	399
Preparation of vaccines	112
Decomplementising serum	2
Sigma tests and Wassermann tests	477
Cultured examinations	944
Examination of water supplies	78
Examination of sewage ... ..	...
Antiseptic co-efficients	4
Biologic tests	10

Helminthological (Worm Diseases)—

Microscopical examinations	1,300
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Zoological or Botanical—

Examination of plankton, etc.	5
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Entomological—

Identification of insects	3
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Pathological—

	1928.
Microscopical examinations	1,020
Sections of tumours, etc.	115
<i>Post-mortem</i> examinations	105
Preparation of museum specimens	17

Chemical—

Various tests	583
Quantitative estimations	48
Biologic tests ... ..	...
Analyses	45

Medico-Legal—

Identification of substances	2
Various tests	112
Biological tests	1

Total 6,747

(C) *Government Analyst*.—To the above figures must be added the work done by the Government Analyst. His figures are really much larger, for in many cases an “investigation” may mean a dozen samples, each requiring two separate estimations, while another “sample” may take two weeks to examine by numerous and lengthy tests.

Bio-chemical	66
Drugs	13
Toxicological	55
Miscellaneous	10
Milk	33
Water	76

Total 253

Remarks on Diseases, etc., dealt with.—(1) *Bacteriology, Protozoology and Helminthology*.—(A) Blackwater Fever.—The Rhodesian Research Fellow has published his results in a separate report.

(B) Malarial Fever.—The Research Entomologist has published the results of his mosquito survey in a separate report. On the routine side, 614 examinations for malaria were made, with 59 positives, as opposed to 88 positives in 1927, 98 in 1926 and 102 in 1925. The positives were practically all malignant tertian, and their distribution through the year was as follows:—

Year.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1927	6	8	15	11	27	8	4	...	...	5	2	3
1928	6	8	5	14	9	4	2	6	1	2	1	1

(C) Undulant (Malta) Fever.—The Research Fellow’s results are published in his report. Of 190 tests made by us, 19 gave positive results (15 in 1927 and 22 in 1926). Of the positives, 9 agglutinated *B. abortus* chiefly, 5 agglutinated *B. abortus* and *M. melitensis* equally, and 5 agglutinated *M. melitensis* chiefly.

(D) Enteric Fever.—Of 217 tests made by us, 21 gave positive results (39 in 1927 and 43 in 1926). Of these, 17 were typhoid, 1 paratyphoid B, and 2 agglutinated typhoid and paratyphoid equally. There was an epidemic at St. George’s College in September and October, which was investigated. A well was found to be dangerously close to the sewage farm, and several people were tested as being possible carriers. There was 1 case of infection with *B. alkaligebes*, which sometimes causes a typhoid-like fever.

(E) Dysentery, Bacillary and Amœbic.—Ninety-nine examinations showed amœbæ to be present in 7 cases (in 2 of which there was probably bacillary infection as well). In 14 cases a cell picture suggested an amœbic infection, and this form of the disease appeared to be a little more common than usual. In 14 cases bacillary infection was indicated, and this is usually the commonest cause of the disease. The remainder were negative, some of them being only cases of mucous colitis, which has a nervous origin, while others may have been due to malaria or severe enteritis.

(F) Pneumonia and Influenza.—A fair number of cases, mainly natives, was found by *post-mortem* examination to have died from these diseases, but very few specimens were sent for special examination, so no idea of their frequency can be given. The pneumococcus and influenza bacillus are found frequently in specimens of sputum sent for vaccines or other purposes.

(G) Cerebro-spinal Fever.—Twenty-five tests gave 12 positives. The tests on several of these were then repeated for purposes of controlling treatment. There were 4 cases in 1927.

(H) Tuberculosis.—Two hundred and ten tests gave 55 positives (64 in 1927 and 40 in 1926).

(I) Leprosy.—Nineteen tests, 1 positive.

(J) Diphtheria.—In consequence of an epidemic at the Girls' High School, 521 tests were made, giving 113 positives, the actual cases numbering 36, who were re-examined until free of infection (as opposed to 10 cases in 1927). Three further cases were very suspicious, and in 6 other cases the diphtheria bacilli were too scanty to justify a diagnosis. A number of healthy people were also examined to see if they were carriers, and 6 of them were found to be so.

Vincent's Organisms.—In 2 of the definite cases of diphtheria the organisms described by Vincent were present as well. They produce a disease not unlike diphtheria, and as a matter of interest and thoroughness we always examine throat swabs for them as well. During the year we found 15 cases of this infection, mostly in the throat, but occasionally in ulcers or burns. It is a common cause of intractable and severe ulcers.

Hoffman's Bacillus.—This is not uncommon in sore throats, and was found 6 times in throat swabs.

(K) Venereal Diseases.—(a) Syphilis.—Four hundred and fifty-eight tests gave 143 positives and 8 doubtful results, as opposed to 55 positives in 1927. In July we began doing the more popular Wassermann test instead of the Sigma re-action. The former test gave 7 doubtful results and the Sigma test only 1. Native police recruits are examined as a matter of routine.

(b) Gonorrhœa.—One hundred and eighty-eight tests gave 71 positives (65 in 1927), 1 of which was an infection of the eye.

(c) Soft Sore.—Ducrey's bacillus was found in 2 cases.

(L) Schistosomiasis (Bilharzia).—Of 176 routine tests, 60 were positive (49 in 1927), but some of these were repeat examinations of cases to see how treatment was progressing. On the suggestion of the Medical Inspector of Schools, a bilharzia survey of all school children in the Colony was begun, and 1,124 tests of the scholars at the Salisbury schools were made by us, with the following results:—

	Examined.	Positive.	Percentage.
Boys	616	43	6.98
Girls	508	1	0.196

The Assistant Medical Inspector of Schools examined 200 school girls at Umtali, with no positives. The higher percentage of boys infected is accounted for by more frequent paddling and bathing. All those found infected were placed under treatment. The survey is to be continued this year until all school children in the Colony have been examined. The effect of length of stay in Rhodesia or the Union and the sex and age distribution are being noted, but the numbers so far, especially among girls, are too few to warrant any remarks at present. During the year a popular pamphlet on bilharzia on the lines of the Union pamphlet was drawn up by us, but it was considered later on to be too lengthy, and a shorter one was written for publication.

(M) Other Worm Diseases.—All examinations of stools for worm ova are made by a method which specially demonstrates ankylostome (hookworm) ova. Thirty-five tests showed tapeworm twice and ankylostome ova three times in human beings and several times in dogs under treatment. The occurrence of ankylostomiasis in dogs caused some surprise, and I received several visitors and letters from the Colony and outside; but it has always been well known that dogs, as well as human beings, are liable to the disease, though the variety

involved is not always the same. A popular pamphlet on ankylostomiasis was drawn up and will be published this year.

(N) Trypanosomiasis.—Eleven negative tests.

(O) Other Diseases.—Ringworm, 1 positive, 8 negatives; kala azar, 3 negatives; tick fever, 4 negatives; anthrax, 5 negatives; 2 cases of leukæmia; scabies, 3 negatives.

A pamphlet on scabies was written by us for publication.

(2) *Pathology*.—One thousand three hundred microscopical examinations, 115 sections of tumours, etc., 105 *post-mortem* dissections and 17 museum preparations for exhibition were made. The microscopical examinations were mainly of urine, blood, stools and other body fluids. The sections and *post-mortems* showed the following conditions:—

(A) Infections.—

Inflammations	32
Tuberculosis	10
Pleurisy, empyema, etc.	8
Lobar pneumonia	27
Broncho-pneumonia	14
Septicæmia	2
Septic meningitis	1
Cerebro-spinal fever	3
Enteric fever	3
Syphilis	1
Bilharzia (appendix)	2
Appendicitis	2
Trypanosomiasis	1
Nephritis	4

(B) Degenerations, Gangrene, Ulcers, etc.—

Atrophy	1
Cirrhosis of liver	1
Gastric ulcer	1
Strangulated hernia	1
Intussusception	1
Senile decay	1

(C) Abnormal Functions, etc.—

Goitre	1
Puerperal	1
Pigmentation	1
Heart disease	4

(D) Accidental Causes.—

Hæmorrhage	2
Injuries, murder, drowning, etc.	22
Death by lightning	1
Poisoning	1

(E) Tumours, Cysts, etc., Malignant.—

Carcinoma	18
Lymphosarcoma	1
Sarcoma	9
Pre-cancer	5

Non-malignant.—

Adenoma	4
Angioma	4
Cysts	6
Fibroma	3
Lipoma	1
Myoma	1
Lymphadenoma	1

The term “pre-cancer” is used to denote a tumour or inflammatory condition that is just about to become cancerous. It is becoming more widely

recognised that many malignant growths are ordinary tumours to begin with, which become cancerous or sarcomatous later on, owing to a malignant change taking place. This is of considerable importance, as it may lead investigators to pay more attention to the cause of the original tumour.

(3) *Bacteriological Examinations of Water, Milk and Food*.—The Salisbury municipal water supply was examined 17 times and private supplies 7 times. The Bulawayo municipal water supply was examined 20 times to ascertain the cause of a bad odour and colour, and the swimming baths twice. Eleven waters from Umtali, 2 from Ruzawi, 3 from Gatooma, 1 from Hillside, 1 from Victoria, 1 from Msasa, 2 from Nyasaland and 6 from Roan Antelope Mine in Northern Rhodesia were examined, a special method being used for the neighbouring Colonies. One specimen of blood meal and one of wheat meal were examined for sterility. Three samples of water containing dead mosquito larvæ were examined for any organism causing their death.

(4) *Medico-Legal*.—Twenty-three seminal stains, 79 blood stains, 5 substances of various kinds and 7 samples of earth were examined.

(5) *Chemical*.—These comprised various chemical tests and quantitative estimations carried out on urine, blood and other body fluids, and totalled 676. A certain number of specimens were handed to the Government Analyst for tests requiring his special knowledge or special apparatus.

Government Analyst.—The Government Analyst reports as follows:—

Statement of Fees Earned.—The fees classed below as “free” represent gratuitous work done for private and other patients in hospital, school children, police, paupers, natives and any Government work. “Charged” represents work done for private patients and a few others:—

	1927.			1928.		
	Free.	Charged.	Combined.	Free.	Charged.	Combined.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
(a) Pasteur Institute	...	21 0 0	21 0 0	...	21 0 0	21 0 0
(b) Routine division	2,049 12 0	495 8 6	2,545 0 6	2,542 0 0	558 1 6	3,100 1 6

(c) Government Analyst's Division.—“Charged” fees amounted to £7 2s. for samples from Salisbury, £19 17s. from other parts of Rhodesia and £4 4s. from other Colonies. No return of “free” fees can be made till next year, as the new tariff was not in force. Much of the remaining work was in the nature of research, and cannot be given in terms of revenue.

General.—The scale of charges for all work at the laboratory was thoroughly revised and a new tariff published by Government Notice. The question of the increasing amount of gratuitous work and the responsibility of doctors' fees was gone into, and recommendations were made by a small committee appointed for the purpose. It is hoped that this will result in an annual contribution by the Salisbury Municipality, and in commuted annual payments by various bodies which will save an enormous amount of book-keeping by both sides.

L. J. JOHN ORPEN,
Director.

15th March, 1929.

Report of the Government Analyst for the Year 1928.

The Medical Director,
Salisbury.

During the year, 253 samples were examined. They may be grouped as follows:—

Bio-chemical—

Blood for non-protein nitrogen	13
Blood for sugar	18
Blood for urea	4
Cerebro-spinal fluid for colloidal gold curves	6
Gastric juice	2
Test meals	11
Stools for neutral and total fat	3
Urine for diastatic power	1
Urine for chlorine	1
Urine for urea	7

Total biological	66
-------------------------	----

Drugs	2
Suspected to contain habit-forming drugs	11

Forensic—

Toxicological	55
Miscellaneous	10
Milk	33
Water	76

Remarks on the above.—*Drugs.*—Both drugs examined were samples of “atophan,” which is the German trade name for phenyl quinoline carboxylic acid. It is reputed to have beneficial effects in cases of rheumatism, neuralgia, etc., and was prescribed for this purpose by a Government Medical Officer. The effects were very surprising, and it was thought that this might be due to the preparation not being of standard quality. The results of analysis and comparison thereof with those of a fresh consignment showed that the preparation which had been used was of standard quality.

Samples Suspected to contain Habit-Forming Drugs.—A Chinaman who was arriving from China was found by the Customs authorities to be in possession of a large parcel of what he stated were Chinese medicines. They were seized and submitted for analysis for habit-forming drugs. They constituted a miscellaneous assortment of pills, oils, medicated tea, waxed balls of material which looked rather like opium, etc. Analysis of samples of each of the 11 different preparations showed, however, that none of them contained opium, nor any constituent nor derivative of opium.

Forensic Analyses.—(A) *Toxicological.*—Analysis of materials for traces of poison is necessary to assist investigating officers to obtain clues, and also as evidence in criminal charges. To establish that death was very probably due to a definitely characterised poison, to detect the manner in which it was administered and conclusively to fix guilt often requires several analyses in a single case. The 55 samples received were submitted in connection with the investigation of 11 cases. Many conditions—such as the long distances, isolation of natives in kraals, their reticence and mendacity, our ignorance of native medicines and the rapidity of decomposition of human remains in our climate—render such investigations especially difficult to the police and to the analyst in this country. But in spite of this a good deal of very useful work was performed in this connection during the year. Analytical investigation established the evidence by which a native who had attempted to poison a European family, and another who had tried to poison several natives, were charged and convicted,

In two native cases analyses of various specimens proved conclusively that murder had been committed by administering poisons, and revealed the manner in which the crimes had been effected.

Under subpoena the Government Analyst attended two High Court sessions during the year to give evidence in charges of murder by poisoning.

(B) General Forensic.—The analyses of two specimens led to a conviction for criminal injuria. The examination of others gave officers of the Criminal Investigation Department information which assisted them in their work.

Waters.—Twenty-three samples of distilled water were analysed for the Postmaster General to decide whether they were sufficiently pure for use in the batteries of the automatic telephone system. Several batches were found to be of inferior quality, and it was recommended that they be rejected. Three samples of river water were analysed for the Research Entomologist in connection with the study of mosquitoes. The analysis of the contents of a well serving immigrants in the Darwin district, to which natives strongly objected, showed that it was so saline as not to constitute a reasonable supply, and indicated that it was desirable to attempt to make more satisfactory arrangements. Two samples were examined in connection with an outbreak of typhoid, and numerous others in connection with sickness or complaints on various mines, police camps, etc. Appropriate recommendations were made for the treatment of such waters as were found to be of inferior quality. The analysis of one sample indicated that continued sickness in a family of seven was probably due to the consumption of water of inferior quality. The general water scarcity during the year rendered it necessary to develop fresh supplies, and a considerable number of samples were submitted in this connection. Analysis showed what sources were suitable, and in some cases prevented waste of labour and money in the development of unsuitable supplies. A minor investigation of the practical issues involved in a suggested method of sterilising bath water against bilharzia was performed.

Milk.—The analysis of two samples submitted by the police proved that the milk in question was being seriously watered by a native employed in the dairy. The other samples were submitted in connection with food control. They comprised samples taken formally in terms of the Foods and Drugs Ordinance, and others taken informally, the latter being chiefly of milk taken by natives direct from dairy to consumer. On the whole, the quality of the milk examined was rather disappointing, but in considering the results due allowance was made for the special difficulties which were encountered by dairymen during the recent dry season. Several vendors were warned, and the supplier of a consignment which was found to be of very inferior quality was prosecuted and convicted.

It is an interesting and perhaps distinctly significant fact that samples procured early in December, before the rains had produced marked improvement in dairy conditions, were of considerably better quality than those procured from the same sources some months previously.

A. W. FACER,
Government Analyst.

Report of the Rhodesian Research Fellow for the Year 1928.

The Medical Director,
Salisbury.

I have the honour to submit a report on the work done by me as Rhodesian Research Fellow during the year 1928.

Blackwater Fever.—(a) Statistics.—The total number of cases reported to me was 37; in 25 of these form 28 A was received and 9 were seen personally by me. No information other than notification was received in 3. The statistics, therefore, are based on the 34 cases of which full information is available.

Number of cases	34
Number of deaths	8

Seasonal Incidence—

January	1
February	5
March	6
April	9
May	8
June	1
July	—
August	2
September	—
October	1
November	—
December	1

Incidence of morbidity and mortality according to sex—

	Cases.	Deaths.
Males	30	6
Females	4	2

Incidence of morbidity according to age groups—

1-9	nil
10-19	5
20-29	5
30-39	7
40-49	14
50-59	3
60 and over	nil

The percentage death rate this year is 23.5 per cent., as compared with 36.1 per cent. last year.

The following information has also been obtained. In 22 cases the attack was the first, in 5 there had been one previous attack, in 1 two, in 3 three, while the attack was the sixth, seventh and ninth in each of the remaining 3 cases. Death occurred in the first attack in 6 cases, in the third attack in 1 case, and in the sixth attack in 1. As long a period as 20 years was noted as having occurred between the last and present attack. Suppression of urine was given as the cause of death in 3 cases, cardiac failure in 2, and toxæmia in 1, the cause of death in the remaining 2 cases not being given.

General.—In this, the final annual report of the present investigator, it may be pertinent briefly to summarise the general lines on which the investigation into the disease has been conducted, and the results obtained therefrom. Obscure and puzzling diseases, such as blackwater fever, are as attractive and beckoning to the theorist as the visionary land of El Dorado is to the seeker of wealth. Thus around blackwater fever has been woven such a maze of conjecture and supposition, unsupported by facts, that to quote the expressions of another

investigator who found himself in a similar position in investigating another physiological problem, "the ordinary mortal, impressed with the necessity of supporting statement by fact, feels that he has strayed into some weird fourth dimension of science, where the substance is the shadow, where fact and hypothesis are mutually confounded, and nothing is but what is not." It may be objected that one of these hypotheses may give the clue that may unravel the mystery. It is extremely unlikely. "Chance comes but to the mind prepared," and the history of every great discovery in medicine commences with the arduous years of work necessary for the establishment of the facts that have led up to it. The object of the present investigation has been, therefore, to obtain information, which in the past has been lacking, on certain features of the disease, and to endeavour to extend our knowledge as to what actually happens prior to and during an attack. It is only when such information is available that it is permissible to advance hypotheses of causation. It is impossible in this short report to give even a summary of the results that have been obtained. They are of an extremely technical nature, and they will be available when the report on the whole four years' investigation is published.

The mosquito survey which has been accomplished by Mr. Leeson is of great value both in itself and its relationship to malaria and blackwater fever.

It is pleasant to acknowledge the whole-hearted and enthusiastic co-operation of the members of the medical profession in Rhodesia, which has rendered possible much of the work that has been done, and the interest displayed by everyone in the outcome of our work.

(b) Research Work.—(i.) Biochemical.—During the year biochemical work has been continued on the lines indicated in previous reports. This has been done in order that any presentation of hypotheses regarding the pathological processes of the disease may be supported by adequate evidence and statistics. We are now in possession of a considerable amount of information which has hitherto been unavailable, and as a consequence are able to define more clearly blood and tissue changes antecedent to and consequent on the onset of the disease.

Recently attention has been particularly devoted to a new hypothesis regarding the etiology of the disease advanced by Blacklock and MacDonald. These observers claim, by comparison of blackwater fever and certain other hæmoglobinuric conditions, and by the evidence afforded by a series of *in vitro* and *in vivo* hæmolysis experiments, that the actual precipitating cause of the intravascular hæmolysis of blackwater fever is the sudden over-production of a normal constituent of the blood, namely, sarco-lactic acid. The explanation is an ingenious one and the sponsors exhibit considerable adroitness in correlating the part played by malignant tertian malaria in the genesis of the condition with their primary postulate. They do not, however, seem to have undertaken any collective survey of lactic acid values in the blood of patients suffering from the disease. This would seem to be of considerable importance, and accordingly an effort is being made to obtain the necessary data from patients in Southern Rhodesia.

Certain other investigations into the degree of oxygen content of the blood in malaria and blackwater fever are also being undertaken, as this may play a determining part in the over-production of lactic acid.

(ii.) Seriological.—A study of hæmolytic factors or substances known to be present in normal blood has been conducted during the past year. Such substances as the salts of bile acids, soaps, particularly sodium oleate, lecithin, have been investigated with a view to determining their hæmolytic concentrations and the possibility that such concentrations may occur in the pathological conditions under review. This work is of an extremely perplexing nature, the greatest difficulty being experienced in obtaining pure specimens of these products on which the basal facts can be worked out. As an illustration of the difficulties experienced, it may be mentioned that two specimens of sodium glycocholate emanating from two of the most famous and reliable chemical houses of Europe, while possessing in common the chemical characteristics of the salts, proved on investigation to have entirely different hæmolytic qualities. In addition, much work has been done on quinine hæmolysis and on the hæmolytic properties of

its metabolites. These results of the work have been of a nature to suggest that quinine has no direct action in the production of the hæmolysis.

Blacklock and MacDonald's work on lactic acid hæmolysis has been repeated, and one point of importance has been discovered, namely, that the hydrogen-ion concentration at which hæmolysis occurs, either in the presence or absence of serum, is such that it is extremely unlikely that it can ever be reached in view of the mechanism that exists in the blood stream for the maintenance of the normal reaction.

(iii.) Experimental.—During the past year an endeavour was made to obtain information regarding the species and percentage of mosquitoes naturally infected with malignant tertian malaria in a blackwater district. With this object in view Mr. Leeson spent a period of about three months in Shamva and the results that he obtained during that time are set out in his report. It was also hoped that during this time there would be found opportunity of conducting experiments with mosquitoes fed on the blood of patients suffering from malignant tertian malaria and blackwater fever, but, unfortunately, during the whole of the period no patients suffering from blackwater and only one suffering from malaria were admitted to Shamva hospital. The conditions for work of this nature are not so favourable in Salisbury, although several attempts were made during the year. In this particular branch of the work a great deal still remains to be done.

(iv.) Therapeutic.—The action of "Plasmochin Compound" has been investigated when circumstances permitted. The opinion formed on its use, in cases of malaria where there has been a previous history of hæmoglobinuria after quinine, is on the whole favourable, and it is considered to be the drug most worthy of trial in such cases. Its action is somewhat puzzling in view of the fact that it contains a certain amount of quinine. This compound has replaced "Plasmochin," the pure substance alone, in the treatment of malignant tertian malaria. As regards the treatment of developed blackwater fever nothing can be added to what was said last year. Blood transfusion and oral or intravenous administration of sodium bicarbonate are the most generally advised measures.

General Investigations.—Undulant Fever and Pseudo-Typhus.—A certain amount of work on both these conditions has been done as cases have occurred, but this work has been subservient to the main work on blackwater fever, and has been restricted to the establishment of a few experimental and serological facts. It is hoped, if the opportunity permits, to publish at a later date the information that has been obtained on the two diseases.

Publications.—The following papers have been published during the year:—

- (1) F. E. Robinson: A Note on an Abnormal Colour Development in the Fouchet Reaction. *The Journal of the Medical Association of South Africa*. Vol. 2, No. 24. 22nd December, 1928.
- (2) G. R. Ross: Erythrocyte Fragility Test. *Annals of Tropical Medicine and Parasitology*. Vol. 22, No. 1. 12th June, 1928.

GEO. R. ROSS,

Rhodesian Research Fellow,

London School of Hygiene and Tropical Medicine.

7th March, 1929.

Report of the Research Entomologist for the Year 1928.

The Medical Director,
Salisbury.

I have the honour to submit my report for the year ended 31st December, 1928.

The work has proceeded on the lines indicated in last year's report. However, to obtain accurate and complete knowledge of the anophelini mosquitoes of a country containing 150,000 square miles, it is obvious that regular and simultaneous collecting of specimens over such a great area, however essential to the object in view, would necessitate the employment of a veritable army of collectors. Nevertheless, with four native collectors (now reduced to three) material has been secured from the following localities:—

Bindura.	Fungwi.	Mchangi.
Bombas.	Garvin Spur.	Mrewa.
Bulawayo.	Gatooma.	Ruwa.
Chishawasha.	Hartley.	Salisbury.
Cleveland Dam.	Inyagui.	Shamva.
Concession.	Kadjamatia.	Sinoia.
Darwin.	Katsumdangas.	Robb's Drift.
Epworth.	Mazoe.	Rusape.
Frans.	Makwiro.	Umsweswe.

Shamva and Salisbury present entirely opposite conditions, and therefore it was thought advisable to concentrate to some degree on the two places. Frequent visits were paid to Shamva during the first three months of the year, hoping that laboratory-bred mosquitoes could be used in malaria transmission experiments. Some hundreds of mosquitoes were reared and kept alive in the temporary laboratory, but so few cases of malaria arrived at the hospital that no opportunity occurred that would enable them to be used. Wild mosquitoes were dissected and examined for zygotes and sporozoites.

The following table is a summary illustrating the degree of numerical prevalence of the species found throughout the year, first in Southern Rhodesia as a whole, then in Shamva and Salisbury districts separately:—

Anopheles.	Southern Rhodesia.	Shamva.	Salisbury.
Gambiae ...	common in season	common in season	...
Funestus ...	common	common	not common
Pretoriensis ...	"	"	common
Rufipes ...	"	"	"
Squamosus ...	"	rare	"
Mauritianus ...	"	"	not common
Maculipalpis ...	not common	not common	"
Argenteolobatus ...	"	...	rare
Rhodesiensis ...	"	rare	"
Marshalli ...	"	"	not common
Cinereus ...	rare	...	rare
Longipalpis ...	"	...	...
Transvaalensis ...	"	..	...
Nili ...	taken once	...	...

Seasonal Prevalence.—The seasons when the various species appear most frequently are given below:—

<i>Anopheles Pretoriensis</i>	All year round.
„ <i>Rufipes</i>	All year round.
„ <i>Funestus</i>	All year round.
„ <i>Mauritanus</i>	All year round.
„ <i>Squamosus</i>	All year round.
„ <i>Gambiae</i>	November-June.
„ <i>Rhodesiensis</i>	August-April.
„ <i>Maculipalpis</i>	July-December.
„ <i>Marshalli</i>	August-November.
„ <i>Argenteolobatus</i>	October-February.
„ <i>Cinereus</i>	October-December.

Infection.—Examination of stomachs and salivary glands throughout the year gave the following results:—

<i>Anopheles.</i>	No. of females.	No. of microscopical preparations.	Infected stomachs	Salivary glands.
<i>Gambiae</i> (<i>Costalis</i>)	233	560	5	...
<i>Funestus</i>	289	650	2	...
<i>Pretoriensis</i>	144	562	...	...
<i>Rufipes</i>	92	347	...	...
<i>Squamosus</i>	7	11	...	...
<i>Rhodesiensis</i>	1	4	...	...
<i>Marshalli</i>	8	30	...	...
<i>Cinereus</i>	2	6	...	...
	776	2,170	7	...

The seven infected mosquitoes were obtained at Shamva during the January to March visit.

***Anopheles Gambiae* (*Costalis*).**—This mosquito appeared and disappeared with its customary regularity throughout the Shamva area, and on one occasion was found within twenty miles of Salisbury. As a result of observations previously noted and corroborated this year, an expedition was commenced down the Mazoe Valley. The dry season “reservoir” for this species was found to exist beyond the Nyaderi junction with the Mazoe River towards the Portuguese border. Pools, puddles and pot-holes formed perennial breeding places.

Temperatures and altitudes recorded in July, 1928, are as follows:—

Place.	Maximum °F.	Minimum °F.	Altitude (feet).
Salisbury	69	40	4,900
Shamva	74	43	3,600
Beyond Nyaderi	87	54	1,300

***Anopheles Funestus*.**—The hibernating and other habits of this species noted last year were confirmed. It is fairly common in the districts around Salisbury, but not at all common within the boundaries of the capital. In the Shamva district it is the predominant species, except from December to April, when *anopheles gambiae* takes first place.

***Anopheles Pretoriensis*.**—The larvæ of this mosquito were found very frequently in association with those of *anopheles gambiae*, but it very rarely entered houses. The adult was caught around cattle and their drinking places. During the dissection of *anopheles* in the search for malarial parasites the stomachs of this species were found to contain certain organisms in very large numbers. A report has been received from Dr. J. G. Thomson, of the London School of Hygiene and Tropical Medicine, who identifies these organisms as *Leptomonad*. This mosquito is universally distributed all over Southern Rhodesia.

Miscellaneous.—Adults and larvæ of the anophelines of this country have been forwarded to the London School of Hygiene and Tropical Medicine, also large numbers of other insects of medical importance. A start has been made in the museum at the laboratory to form an exhibit consisting of the common disease-bearing insects of Southern Rhodesia. Further maps, charts and diagrams have been constructed illustrating the relationship between blackwater fever, malaria, meteorological conditions and other factors. Visits have been

made to Shamva, Bindura, Concession and Bulawayo to gain information regarding local *anophelini*.

The pamphlet describing the mosquito, its life history, connection with malaria and measures for its control has been distributed broadly throughout the country. Only a few copies of this pamphlet are now available. A paper was read in September at a meeting of the British Medical Association (Mashonaland branch), entitled "Observations on *Anophelini* of Southern Rhodesia, with Special Reference to *Anopheles costalis*." Copies of this paper were mimeographed and circulated among the medical officers of the country by the Medical Director.

Rearing of Mosquitoes.—From this work two synoptic tables have been constructed for the identification of *anophelini* of Southern Rhodesia, one for females and one for larvæ. This work was continued for the greater part of the year in the hope of being able to carry out transmission experiments, but in almost every case the mosquitoes refused to feed and died. Salivary glands of mosquitoes are being dissected and preserved in connection with research on blackwater fever. Various aquatic plants were grown with a view to noting their effect on mosquito larvæ. None of the plants used is of striking value in mosquito reduction. Photographs illustrative of various phases of the subject have been made.

I wish to record sincere thanks to Dr. J. G. Thomson, London School of Hygiene and Tropical Medicine, for the examination of the stomach preparations of *anopheles pretoriensis*; and to Dr. M. Placido, Portuguese Consul, Salisbury, who gave facilities for the passage into Portuguese territory to the expedition of June and July; owing to difficulties connected with the feeding of the native carriers, however, the party had to return before crossing the border; also to Mr. W. Edwards, Native Commissioner, Mrewa, for kindly providing native carriers and interpreter; also to those Native Commissioners who have found accommodation for my native collectors; and to the Government Medical Officers and others in various districts who have provided transport and in many ways assisted me from time to time.

H. S. LEESON,
Research Entomologist,
London School of Hygiene and Tropical Medicine.

25th January, 1929.

PART III.**ESTABLISHMENT.**

The establishment as authorised during the year 1928 was as follows:—

Medical Director, Medical Inspector of Schools, Assistant Medical Inspector of Schools, Bacteriologist, Government Analyst, Schools Dental Surgeon, 2 Senior Government Medical Officers (whole time), 3 Senior Government Medical Officers (Grade I.), 5 Government Medical Officers (Grade II.), 12 Government Medical Officers (Grade III.), 6 Aided Medical Officers, Chief Clerk, Senior Technical Clerk, 1 Clerk (Grade II.), 3 Clerks on probation, 1 Woman Clerk (Old Middle Grade), 1 Woman Clerk (Middle Grade), 4 Women Clerks (Lower Grade), 7 Women Clerks (Temporary), 2 Inspectors of Compounds, 2 Laboratory Assistants, 2 Radiographers, 5 Hospital Secretaries and Dispensers, 2 Dispensers, Senior Matron, 8 Hospital Matrons, 2 Assistant Matrons, 12 Nurse Matrons and Sisters, 46 qualified Nurses, 68 Probationers, 1 District Nurse, 1 Masseuse, 2 Male European Orderlies, 9 Asylum Keepers and Overseers, 2 Interpreters, 2 Messengers, 5 Native Laboratory Assistants, 1 Matron (Mental Hospital), 1 Sister (Mental Hospital), 3 Nurses (Mental Hospital).

Supplementary Auxiliary Staff.—Six part-time hospital secretaries, 2 needle-women, 1 laundress, 1 European female cook, 2 Indian cooks.

The miscellaneous native staff attached to the various institutions totalled 272.

Total European staff	235
Total native staff	279
	<hr/>
	514

TABLE 1.

EUROPEAN BIRTHS, 1928.

District.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.
Salisbury	29	30	29	25	39	30	30	30	23	34	37	35	371
Bulawayo	24	27	27	30	28	25	35	25	20	23	28	27	329
Umtali	9	6	9	16	7	6	6	7	12	11	9	3	101
Gwelo	3	10	5	4	4	8	8	3	9	6	5	4	69
Victoria	3	2	2	4	2	6	3	3	3	3	5	7	43
Gatooma	5	3	3	6	7	5	3	4	5	4	4	3	52
Gwanda ... ..	...	...	2	2	2	...	1	...	1	...	2	4	14
Selukwe	2	...	2	...	1	3	4	1	1	1	...	3	18
Charter	2	2	3	3	3	3	3	2	3	5	1	6	36
Melsetter	1	1	...	3	...	...	1	1	3	2	5	1	18
Umvuma ... ..	...	2	1	2	2	2	1	1	1	2	1	1	16
Hartley	2	1	4	...	1	2	1	1	1	2	1	...	16
Que Que	2	3	1	5	3	1	3	...	...	2	...	1	21
Totals	82	87	88	100	99	91	99	78	82	105	98	95	1,104

TABLE 2.

EUROPEAN DEATHS, 1928

Age periods.	Males	Females.	Totals.
0-1	43	37	80
1-5	14	12	26
5-15	12	9	21
15-25	28	8	36
25-35	20	19	39
35-45	39	14	53
45-55	66	19	85
55-65	43	18	61
65-75	36	17	53
75-85 and over	11	7	18
Age unknown	4	1	5
All ages	316	161	477

TABLE 3.
EUROPEAN DEATHS, 1928.

Distriet	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
Salisbury	8	16	17	10	13	19	18	14	14	22	14	11	176
Bulawayo	11	10	11	7	11	11	9	20	9	15	11	6	131
Umtali	6	3	1	4	4	1	4	4	6	6	3	3	45
Gwelo	5	4	2	2	4	5	3	6	...	1	9	5	46
Gatooma	3	3	3	...	3	3	...	...	2	2	...	...	19
Victoria	1	...	...	2	1	2	1	2	2	3	...	3	17
Gwanda	...	...	...	...	1	...	2	...	...	1	...	3	7
Melsetter	...	...	...	...	1	...	2	3	...	1	...	...	7
Umvuma	...	...	1	...	...	...	...	...	...	1	1	...	3
Charter	1	1	1	1	...	1	...	1	1	2	2	1	12
Selukwe	1	1	...	...	...	1	...	...	...	...	...	...	3
Hartley	...	...	...	1	...	1	...	1	...	...	...	...	3
Que Que	1	...	1	...	...	1	1	3	...	1	...	...	8
Totals	37	38	37	27	38	45	40	54	34	55	40	32	477

TABLE 4.
EUROPEAN BIRTHS AND DEATHS, 1928.

Month	Births	Deaths	Ages of dying.										
			0-1	1-5	5-15	15-25	25-35	35-45	45-55	55-65	65-75	75-85 and over	Age un- known
January	82	37	12	4	1	...	4	3	3	7	1	1	1
February	87	38	6	3	2	2	3	5	8	5	3	1	...
March	88	37	8	4	2	3	2	4	5	2	5	1	1
April	100	27	6	...	1	...	2	4	7	3	3	1	...
May	99	38	4	1	1	6	3	5	6	5	6	1	...
June	91	45	6	2	1	5	3	5	8	6	6	3	...
July	99	40	4	...	2	6	5	4	11	3	4	1	...
August	78	54	10	3	7	3	3	6	7	6	3	4	2
September	82	34	3	5	2	3	6	2	5	5	3	...	...
October	105	55	8	3	1	5	5	4	8	11	6	3	1
November	98	40	9	...	1	2	2	4	12	5	5	...	...
December	95	32	4	1	...	1	1	7	5	3	8	2	...
Totals	1,104	477	80	26	21	36	39	53	85	61	55	18	5

22.22 per cent. of European deaths.

Illegitimate births 2.35 per cent. of total births.

TABLE 5.

TABLE SHOWING EUROPEAN ADMISSIONS TO HOSPITALS
DURING 1928.

Name of hospital	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
Salisbury	172	163	149	144	148	143	137	169	154	166	146	143	1,834
Bulawayo	111	132	124	128	117	113	118	149	114	144	125	96	1,471
Umtali	42	42	46	52	38	26	36	31	30	46	37	31	457
Gwelo	56	43	24	37	42	39	40	38	33	51	25	32	440
Ft. Victoria	29	13	15	9	10	19	14	15	8	21	14	6	173
Gwanda	6	4	4	12	1	2	3	3	6	2	2	...	45
Enkeldoorn	7	3	5	7	7	11	15	9	2	7	6	3	82
Gatooma	20	36	31	36	16	17	25	22	24	24	25	31	307
Shamva	11	19	10	8	7	6	12	1	4	4	5	6	93
Sinoia	10	7	11	7	6	9	2	5	4	8	7	6	82
Belingwe	2	2	1	1	1	1	1	...	1	1	...	...	11
Totals	446	464	420	441	393	386	403	442	380	474	392	354	4,995

TABLE 6.

TABLE SHOWING NATIVE ADMISSIONS TO HOSPITALS DURING 1928.

Name of hospital	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
Salisbury	120	126	113	117	100	153	190	196	134	131	119	119	1,618
Bulawayo	127	126	133	148	117	110	152	153	177	193	145	149	1,730
Umtali	30	28	30	26	40	30	28	43	12	30	32	25	354
Gwelo	46	42	43	32	43	37	59	62	85	68	47	46	610
Ft. Victoria	19	15	14	10	16	13	19	4	24	9	12	9	164
Gwanda	12	15	17	15	12	15	18	39	23	10	38	29	243
Enkeldoorn	9	9	3	6	10	14	10	8	5	10	10	8	102
Gatooma	63	55	60	48	53	42	77	98	75	64	60	71	766
Shamva	21	20	26	30	23	27	21	21	27	13	22	14	265
Sinoia	6	16	27	15	11	12	21	20	23	22	24	20	217
Belingwe	5	2	8	1	6	9	5	5	8	6	8	5	68
Totals	458	454	474	448	431	462	600	649	593	556	517	495	6,137

TABLE 7.

Table showing monthly admissions to hospitals during 1928 from malaria, blackwater fever, dysentery, pneumonia, typhoid fever and scurvy.

EUROPEANS.

Diseases	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
Malaria	74	108	103	133	81	33	27	25	21	43	42	36	726
Blackwater fever	...	3	4	4	4	1	...	1	2	...	...	1	20
Dysentery	11	9	14	4	3	1	7	4	11	18	7	15	104
Pneumonia	7	6	4	3	4	18	16	17	14	9	5	6	109
Typhoid fever	2	3	...	2	6	3	2	1	6	12	11	8	56
Scurvy	...	...	...	...	...	...	...	...	1	...	...	...	1

NATIVES.

Malaria	26	37	54	42	31	34	26	20	18	19	33	30	370
Blackwater fever	...	...	...	2	1	1	...	...	...	...	...	...	4
Dysentery	7	9	9	2	7	7	2	2	4	16	10	9	84
Pneumonia	36	69	44	49	54	89	170	145	109	98	79	61	1,003
Typhoid fever	3	...	1	1	2	..	2	2	1	...	3	1	16
Scurvy	8	2	4	1	1	...	9	3	9	15	20	33	105

TABLE 8.

Cases, with mortality rate per cent, admitted to hospitals during 1928, as compared with 1927.

Name of hospital		1927			1928		
		Cases	Deaths	Mortality rate per cent.	Cases	Deaths	Mortality rate per cent.
Salisbury	White	1,570	53	3.38	1,834	77	4.18
	Native	1,527	249	16.31	1,618	260	16.05
Bulawayo	White	1,209	52	4.30	1,471	61	4.14
	Native	1,306	135	10.34	1,730	177	10.23
Umtali	White	381	15	3.94	457	15	3.28
	Native	372	32	8.60	354	41	11.60
Gwelo	White	314	14	4.46	440	26	5.91
	Native	535	65	12.15	610	64	10.51
Fort Victoria	White	153	3	1.96	173	12	6.94
	Native	146	8	5.48	164	15	9.15
Gwanda	White	39	2	5.13	45	...	...
	Native	134	9	6.72	243	19	7.82
Enkeldoorn	White	69	1	1.45	82	3	3.66
	Native	113	2	1.77	102	6	5.80
Gatooma	White	241	4	1.66	307	15	4.90
	Native	489	55	11.25	766	101	13.20
Shamva	White	97	3	3.09	93	4	4.30
	Native	196	35	17.86	265	34	12.85
Sinoia	White	142	4	2.82	82	4	4.88
	Native	254	41	16.14	217	38	17.50
Belingwe	White	16	...	...	11	2	18.20
	Native	106	1	0.94	68	5	7.35
Totals	White	4,231	151	3.57	4,995	219	4.40
	Native	5,178	632	12.20	6,137	760	12.39

TABLE 9.

Cases, with mortality rate per cent., of malarial fever admitted to hospitals during 1928, as compared with 1927.

Name of hospital		1927.			1928.		
		Cases.	Deaths.	Mortality rate per cent.	Cases.	Deaths.	Mortality rate per cent.
Salisbury	White	132	2	1.51	158	1	0.63
	Native	109	1	0.92	88	1	1.1
Bulawayo	White	75	...	...	141	2	1.4
	Native	68	...	...	106	...	...
Umtali	White	112	1	0.89	173	2	1.15
	Native	81	8	9.88	64	5	7.82
Gwelo	White	42	...	...	60	1	1.66
	Native	31	...	...	24	1	4.1
Fort Victoria	White	18	...	...	36	1	2.8
	Native	...	...	...	2	...	...
Gwanda	White	5	...	...	9	...	...
	Native	6	...	...	8	...	...
Enkeldoorn	White	15	...	...	9	1	11.1
	Native	11	...	...	8	...	...
Gatooma	White	49	...	...	67	2	2.98
	Native	15	1	6.67	9	1	11.1
Shamva	White	41	...	...	40	...	...
	Native	28	2	7.14	39	4	10.26
Sinoia	White	53	1	1.89	31	...	...
	Native	11	1	9.09	17	...	...
Belingwe	White	3	...	...	2	...	...
	Native	19	...	...	5	...	...
Totals	White	545	4	0.73	726	10	1.38
	Native	379	13	3.43	370	12	3.22

TABLE 10.

Cases, with mortality rate per cent., of hæmoglobinuric fever (blackwater) admitted to hospitals in 1928, as compared with 1927.

Name of hospital		1927.			1928.		
		Cases	Deaths	Mortality rate per cent.	Cases	Deaths	Mortality rate per cent.
Salisbury	White	4	2	50.00	3	...	...
	Native	...	...	...	2	...	...
Bulawayo	White	7	2	28.57	4	...	...
	Native	...	...	...	1	1	100.00
Umtali	White	4	1	25.00	9	2	22.2
	Native	...	...	...	1	...	...
Gwelo	White	...	...	...	...	...	...
	Native	...	...	...	...	...	...
Fort Victoria	White	1	1	100.00	...	...	...
	Native	1	1	100.00	...	...	...
Gwanda	White	...	...	...	1	...	...
	Native	...	...	...	...	...	...
Enkeldoorn	White	...	...	...	...	...	...
	Native	...	...	...	...	...	...
Gatooma	White	1	...	...	1	...	...
	Native	...	...	...	...	...	...
Shamva	White	4	...	...	2	1	50.00
	Native	...	...	...	...	...	...
Sinoia	White	1	1	100.00	...	...	...
	Native	...	...	...	...	...	...
Belingwe	White	...	...	...	...	...	...
	Native	...	...	...	...	...	...
Totals	White	22	7	31.82	20	3	15.00
	Native or Coloured	1	1	100.00	4	1	25.00

TABLE 11.

Cases, with mortality rate per cent., of pneumonia admitted to hospitals in 1928,
as compared with 1927.

Name of hospital		1927.			1928		
		Cases	Deaths	Mortality rate per cent.	Cases	Deaths	Mortality rate per cent.
Salisbury	White	34	4	11.76	50	8	20.00
	Native	415	116	27.96	525	137	26.20
Bulawayo	White	17	3	17.65	28	6	24.00
	Native	133	51	38.35	228	59	26.00
Umtali	White	5	...	...	1	1	100.00
	Native	47	12	25.53	50	24	48.00
Gwelo	White	10	1	10.00	11	1	9.09
	Native	74	27	36.49	76	28	36.30
Fort Victoria	White	2	1	50.00	6	3	50.00
	Native	10	1	10.00	8	3	37.50
Gwanda	White	...	...	...	...	...	...
	Native	7	1	14.29	9	6	66.66
Enkeldoorn	White	5	...	...	1	...	...
	Native	8	...	...	7	2	28.50
Gatooma	White	12	...	...	10	3	30.00
	Native	57	15	26.32	47	19	40.42
Shamva	White	2	...	...	2	...	...
	Native	9	4	44.45	17	3	17.65
Sinoia	White	2	...	...	...	...	...
	Native	28	13	46.43	34	13	38.20
Belingwe	White	1	...	...	...	...	...
	Native	8	...	...	2	1	50.00
Totals	White	90	9	10.00	109	22	20.10
	Native	796	240	30.15	1,003	295	29.40

TABLE 12.

Cases, with mortality rate per cent., of dysentery admitted to hospitals in 1928,
as compared with 1927.

Name of hospital		1927.			1928.		
		Cases.	Deaths.	Mortality rate per cent.	Cases.	Deaths.	Mortality rate per cent.
Salisbury	White	25	1	4.00	32	2	6.25
	Native	29	7	24.14	34	11	32.39
Bulawayo	White	13	...	...	25	1	4.00
	Native	11	3	27.27	20	5	25.00
Umtali	White	11	2	18.18	17	...	...
	Native	4	2	50.00	6	...	...
Gwelo	White	1	...	...	9	1	11.10
	Native	6	2	33.33	9	2	22.20
Fort Victoria	White	4	...	...	9	...	...
	Native	3	...	...	...	...	...
Gwanda	White	2	...	...	1	...	...
	Native	...	...	...	1	...	...
Enkeldoorn	White	3	...	...	2	...	...
	Native	...	...	...	2	...	...
Gatooma	White	7	...	...	2	...	...
	Native	9	1	11.11	3	1	33.33
Shamva	White	3	1	33.33	1	...	...
	Native	1	1	100.00	...	...	...
Sinoia	White	1	...	...	5	1	20.00
	Native	7	1	14.29	6	2	33.33
Belingwe	White	...	...	...	1	...	...
	Native	3	1	33.33	3	2	66.66
Totals	White	70	4	5.71	104	5	4.80
	Native	73	18	24.66	84	23	27.40

TABLE 13.

Cases, with mortality rate per cent., of typhoid fever admitted to hospitals in 1928, as compared with 1927.

Name of hospital.		1927.			1928.		
		Cases.	Deaths.	Mortality rate per cent.	Cases.	Deaths.	Mortality rate per cent.
Salisbury	White	8	...	...	25	4	16.00
	Native	7	6	85.72	3	2	66.66
Bulawayo	White	14	...	...	12	1	8.50
	Native	5	2	40.00	7	2	28.60
Umtali	White	...	...	...	2	...	...
	Native	...	...	...	2	...	...
Gwelo	White	3	2	66.66	7	2	28.50
	Native	2	...	...	1	...	...
Fort Victoria	White	...	...	...	5	1	20.00
	Native	...	...	...	...	...	...
Gwanda	White	...	...	...	1	...	...
	Native	1	1	100.00	2	2	100.00
Enkeldoorn	White	1	...	...	...	...	...
	Native	...	...	...	...	...	...
Gatooma	White	3	...	...	2	...	...
	Native	1	1	100.00	1	1	100.00
Shamva	White	...	...	...	2	...	...
	Native	...	...	...	...	...	...
Sinoia	White	...	...	...	...	...	...
	Native	...	...	...	...	...	...
Belingwe	White	...	...	...	...	...	...
	Native	...	...	...	...	...	...
Totals	White	29	2	6.90	56	8	14.30
	Native	16	10	62.50	16	7	43.70

TABLE 14.

Cases, with mortality rate per cent., of scurvy admitted to hospitals in 1928, as compared with 1927.

Name of hospital		1927			1928		
		Cases	Deaths	Mortality rate per cent.	Cases	Deaths	Mortality rate per cent.
Salisbury	White	...	...	...	...	...	...
	Native	3	...	...	3	1	33.33
Bulawayo	White	...	...	...	1	...	...
	Native	43	...	...	40	1	2.50
Umtali	White	...	...	...	...	...	...
	Native	2	...	...	2	1	50.00
Gwelo	White	...	...	...	...	...	...
	Native	23	2	8.70	21	3	14.20
Fort Victoria	White	...	...	...	...	...	...
	Native	2	...	...	...	...	...
Gwanda	White	...	...	...	...	...	...
	Native	11	1	9.09	19	1	5.20
Enkeldoorn	White	...	...	...	...	...	...
	Native	...	...	...	...	...	...
Gatooma	White	...	...	...	...	...	...
	Native	14	1	7.14	12	...	...
Shamva	White	...	...	...	...	...	...
	Native	1	...	...	...	...	...
Sinoia	White	...	...	...	...	...	...
	Native	9	2	22.22	8	...	...
Belingwe	White	...	...	...	...	...	...
	Native	7	...	...	...	...	...
Totals	White	...	...	...	1	...	...
	Native	115	6	5.22	105	7	6.65

TABLE 15.

RETURN OF DEATHS REGISTERED DURING THE YEAR 1928.

[illegible]

Name of disease.		EUROPEANS.																NATIVES.						Grand totals.									
		0-1		1-5		5-15		15-25		25-35		35-45		45-55		55-65		65-75		75-85		Age unknown				Totals.		Under 5 years		Over 5 years		Totals.	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F			M	F	M	F	M	F	M	F
18	17	14	11	9	7	17	6	15	13	33	10	47	16	24	14	25	14	4	1	1	208	113	25	16	615	27	640	43	848	156			
7	4	...	...	1	...	...	...	...	...	1	...	...	...	1	...	1	...	...	...	...	...	7	4	3	...	...	...	...	...	10	4
...	...	...	...	...	1	...	1	...	...	1	...	...	...	1	...	...	...	...	...	...	...	4	...	1	...	2	...	6	...	10	2
...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	4	...	7	2
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	8	...	9	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...
...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	1	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	1	2
1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	3	...
VI. NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ANNEXA.																																	
...		
120.	Bright's disease	...	...	...	...	...	...	...	...	...	...	...	2	...	1	2	1	...	...	...	8	2	...	...	8	...	8	...	16	2	2
122.	Other diseases of the kidneys and annexa	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	3	...	4	...	...
124.	Diseases of the bladder	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
126.	Diseases of the prostate	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	2	...	...	...	...	...	...	2	...	...
129.	Uterine tumour (non-cancerous)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
133.	Non-puerperal diseases of the breast (cancer excepted)	1	...	
VII. THE PUERPERAL STATE.																																	
134.	Accidents of pregnancy	3	3	3	1	
135.	Puerperal hæmorrhage	1	...
136.	Other accidents of labour	1	1	5	...
137.	Puerperal septicæmia	2	2	5	...
VIII. DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE.																																	
142.	Gangrene	
145.	Other diseases of the skin and annexa	
IX. DISEASES OF THE BONES AND OF THE ORGANS OF LOCOMOTION.																																	
146.	Diseases of the bones (tuberculosis excepted)	
147.	Diseases of the joints (tuberculosis and rheumatism excepted)	1	1	
X. MALFORMATIONS.																																	
150.	Congenital malformations (still-births not included)	
...	Carried forward	

Name of disease.	EUROPEANS.																NATIVES.						Grand totals											
	0-1		1-5		5-15		15-25		25-35		35-45		45-55		55-65		65-75		75-85		Age unknown				Totals		Under 5 years		Over 5 years		Totals			
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F				
Brought forward	31	27	14	11	10	8	21	7	17	19	36	11	55	18	33	16	30	15	7	4	1	1	256	137	30	17	666	40	696	57	952	194		
XI. DISEASES OF EARLY INFANCY.																																		
151. Congenital debility, icterus and sclerema	12	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12	9	8	3	...	...	8	3	20	12	
152. Other diseases peculiar to early infancy	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	1	...	...	1	1	1	2	
XII. OLD AGE.																																		
154. Senility	2	2	2	2	...	...	4	4	...	...	3	1	3	1	7	5		
XIII. AFFECTIONS PRODUCED BY EXTERNAL CAUSES.																																		
155. Suicide by poison	1	...	...	1	1	1	...	1	...	...	...	...	...	...	3	2	...	...	...	...	...	...	...	3	2		
157. Suicide by hanging or strangulation	1	...		
159. Suicide by firearms	1	...	...	...	...	...	1	...	2	...	1	...	...	...	...	6	...	...	...	...	1	...	...	...	6	...		
160. Suicide by cutting or piercing instruments	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...		
161. Suicide by jumping from high places	1	...	...	...	...	...	...	...	1	...	
163. Other suicides	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	
165. Other acute poisonings	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	2	...	...
166. Conflagration	1	...	...	...	...	...	...	...	...	...	1	...	2	...	...	...	...	...	2	...	...
167. Burns (conflagration excepted)	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	12	1	...	
168. Absorption of deleterious gases (conflagration excepted)	1	...
169. Accidental drowning	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2	...	...	2	...	...
170. Traumatism by firearms	1	...	...	3	...	...	...	...	...	1	...	1	...	1	...	...	...	...	7	...	...	...	...	1	...	...	...	3	1	...	
171. Traumatism by cutting or piercing instruments	8	...	
172. Traumatism by fall	2	...	...	...	2	...	...
173. Traumatism in mines and quarries	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
175. Traumatism by other crushing (vehicles, railways, landslides, etc.)	1	...	...	...	...	...	1	...	...	...	...	4	...	...	...	...	1	...	...	...	5	...	2	
182. Homicide by firearms	1	1	2	2	...
184. Homicide by other means	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	
185. Fractures, cause not specified	1	...	1	...	...	...	...	...	...	2	...	...	...	...	10	...	...	...	12	...	...
186. Other external violence	1	...	1	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	2	...	...
186a. Execution	9	...	...	...	9	...	...
XIV. ILL-DEFINED DISEASES.																																		
187. Ill-defined organic disease	1	...	...
188. Sudden death	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	4	...	...
189. Cause of death not specified or ill-defined	1	...	2	...	2	...	...	...	...	...	...	7	3	2	3	...	3	1	...	...	5	12	7	
Totals	43	37	14	12	12	9	28	8	20	19	39	14	66	19	43	18	36	17	11	7	4	1	316	161	43	24	710	44	753	68	1069	229		

TABLE 16.

CLASSIFICATION OF DEATHS (EUROPEANS), 1928.

Deaths classified according to the international classification of causes of sickness and death.

I.—GENERAL DISEASES.

Classifi- cation No.	Disease.								No. of Deaths.
1	Typhoid fever	...	...	...	...	...	...	...	8
4	Malaria	...	...	...	...	...	...	...	26
4a	Blackwater fever	...	...	...	...	...	...	...	12
6	Measles	...	...	...	...	...	...	...	1
8	Whooping cough	...	...	...	...	...	...	...	4
9	Diphtheria and croup	...	...	...	...	...	...	...	3
10	Influenza	...	...	...	...	...	...	...	12
14	Dysentery	...	...	...	...	...	...	...	10
18	Erysipelas	...	...	...	...	...	...	...	1
20	Purulent infection and septicæmia	...	...	...	...	...	...	...	7
28	Tuberculosis of the lungs	...	...	...	...	...	...	...	22
34	Tuberculosis of other organs	...	...	...	...	...	...	...	1
36	Rickets	...	...	...	...	...	...	...	1
39	Cancer and other malignant tumours of the buccal cavity	...	...	...	...	...	...	...	4
40	Cancer and other malignant tumours of the stomach, liver	...	...	...	...	...	...	...	14
41	Cancer and other malignant tumours of the peritonæum, intestines, rectum	...	...	...	...	...	...	...	3
42	Cancer and other malignant tumours of the female genital organs	...	...	...	...	...	...	...	6
43	Cancer and other malignant tumours of the breast	...	...	...	...	...	...	...	4
45	Cancer and other malignant tumours of other organs or of organs not specified	...	...	...	...	...	...	...	11
46	Other tumours (tumours of the female genital organs excepted)	...	...	...	...	...	...	...	1
47	Acute articular rheumatism	...	...	...	...	...	...	...	3
48	Chronic rheumatism and gout	...	...	...	...	...	...	...	1
50	Diabetes	...	...	...	...	...	...	...	8
51	Exophthalmic goitre	...	...	...	...	...	...	...	1
53	Leucæmia	...	...	...	...	...	...	...	1
56	Alcoholism (acute or chronic)	...	...	...	...	...	...	...	4

II.—DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SPECIAL SENSE.

60	Encephalitis	...	...	...	...	...	...	...	1
61	Simple meningitis	...	...	...	...	...	...	...	4
61a	Cerebro-spinal fever	...	...	...	...	...	...	...	13
63	Other diseases of the spinal cord	...	...	...	...	...	...	...	1
64	Cerebral hæmorrhage, apoplexy	...	...	...	...	...	...	...	13
66	Paralysis without specified cause	...	...	...	...	...	...	...	4
67	General paralysis of the insane	...	...	...	...	...	...	...	3
68	Other forms of mental alienation	...	...	...	...	...	...	...	2
69	Epilepsy	...	...	...	...	...	...	...	1
71	Convulsions of infants	...	...	...	...	...	...	...	2
76	Diseases of the ears	...	...	...	...	...	...	...	1

III.—DISEASES OF THE CIRCULATORY SYSTEM.

78	Acute endocarditis	...	...	...	...	...	...	...	9
79	Organic diseases of the heart	...	...	...	...	...	...	...	14
80	Angina pectoris	...	...	...	...	...	...	...	1
81	Diseases of the arteries, atheroma, aneurysm, etc.	...	...	...	...	...	...	...	3
82	Embolism and thrombosis	...	...	...	...	...	...	...	4
84	Diseases of the lymphatic system, lymphangitis, etc.	...	...	...	...	...	...	...	1
85	Hæmorrhage, other diseases of the circulatory system	...	...	...	...	...	...	...	1

IV.—DISEASES OF THE RESPIRATORY SYSTEM.

87	Diseases of the larynx	...	...	...	...	...	...	...	3
89	Acute bronchitis	...	...	...	...	...	...	...	5
90	Chronic bronchitis	...	...	...	...	...	...	...	2
91	Broncho-pneumonia	...	...	...	...	...	...	...	9
92	Pneumonia	...	...	...	...	...	...	...	42
93	Pleurisy	...	...	...	...	...	...	...	1
94	Pulmonary congestion, pulmonary apoplexy	...	...	...	...	...	...	...	3
95	Gangrene of the lung	...	...	...	...	...	...	...	1

Carried forward ... 313

V.—DISEASES OF THE DIGESTIVE SYSTEM.

Classifi- cation No.	Disease.	No. of Deaths.
	Brought forward	313
100	Diseases of the pharynx	1
101	Diseases of the œsophagus	1
102	Ulcer of the stomach	4
103	Other diseases of the stomach (cancer excepted)	2
104	Diarrhœa and enteritis (under 2 years)	11
105	Diarrhœa and enteritis (2 years and over)	4
108	Appendicitis and typhilitis	7
109	Hernias, intestinal obstructions	2
110	Diseases of the intestines	1
113	Cirrhosis of the liver	3
114	Biliary calculi	2
115	Other diseases of the liver	4
117	Simple peritonitis (non-puerperal)	3

VI.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM
AND ANNEXA.

120	Bright's disease	10
122	Other diseases of the kidneys and annexa	1
124	Diseases of the bladder	1
126	Diseases of the prostate	2

VII.—THE PUERPERAL STATE.

134	Accidents of pregnancy	3
136	Other accidents of labour	1
137	Puerperal septicæmia	2

VIII.—DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE.

145	Other diseases of the skin and annexa	3
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IX.—DISEASES OF THE BONES AND OF THE ORGANS OF LOCOMOTION.

146	Diseases of the bones (tuberculosis excepted)	1
147	Diseases of the joints (tuberculosis and rheumatism excepted)	1

X.—MALFORMATIONS.

150	Congenital malformations (still-births not included)	10
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XI.—DISEASES OF EARLY INFANCY.

151	Congenital debility, icterus and sclerema	21
152	Other diseases peculiar to early infancy	1

XII.—OLD AGE.

154	Senility	8
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XIII.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.

155	Suicide by poison	5
159	Suicide by firearms	6
160	Suicide by cutting or piercing instruments	1
161	Suicide by jumping from high place	1
163	Other suicides	1
165	Other acute poisonings	2
166	Conflagration	1
167	Burns (conflagration excepted)	1
169	Accidental drowning	2
170	Traumatism by firearms	7
172	Traumatism by fall	1
173	Traumatism in mines and quarries	1
175	Traumatism by other crushing (vehicles, railways, landslides, etc.)	4
182	Homicide by firearms	2
184	Homicide by other means	1
185	Fractures (cause not specified)	2
186	Other external violence	2

XIV.—ILL-DEFINED DISEASES.

188	Sudden death	4
189	Cause of death not specified or ill-defined	10

Total	...	477
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TABLE 17.

CLASSIFICATION OF DEATHS (NATIVES AND COLOURED), 1928.

Deaths classified according to the international classification of causes of sickness and death.

I.—GENERAL DISEASES.

Classifi- cation No.	Disease.	No. of Deaths.
1	Typhoid fever	6
4	Malaria	10
4a	Blackwater fever (Asiatic)	1
5	Small-pox	5
8	Whooping cough	2
9	Diphtheria and croup	1
10	Influenza	10
14	Dysentery	17
18	Erysipelas	1
20	Purulent infection and septicæmia	6
24	Tetanus	6
28	Tuberculosis of the lungs	103
29	Acute miliary tuberculosis	1
34	Tuberculosis of other organs	1
35	Disseminated tuberculosis	1
37	Syphilis	14
40	Cancer and other malignant tumours of the stomach, liver	5
41	Cancer and other malignant tumours of the peritonæum, intestines, rectum	1
42	Cancer and other malignant tumours of the female genital organs	1
45	Cancer and other malignant tumours of other organs or of organs not specified	6
46	Other tumours (tumours of the female genital organs excepted)	1
47	Acute articular rheumatism	1
49	Scurvy	6
55	Other general diseases	2
55e	Framboesia or yaws	1

II.—DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS
OF SPECIAL SENSE.

61	Simple meningitis	...	...	...	...	...	...	32
61a	Cerebro-spinal meningitis	...	...	...	...	...	...	8
62	Locomotor ataxia	...	...	...	...	...	...	1
64	Cerebral hæmorrhage, apoplexy	...	...	...	...	...	...	2
66	Paralysis without specified cause	...	...	...	...	...	...	5
68	Other forms of mental alienation	...	...	...	...	...	...	30
69	Epilepsy	...	...	...	...	...	...	8
71	Convulsions of infants	...	...	...	...	...	...	2

III.—DISEASES OF THE CIRCULATORY SYSTEM.

77	Pericarditis	...	...	...	...	...	...	...	3
78	Acute endocarditis	...	...	...	...	...	...	...	4
79	Organic diseases of the heart	...	...	...	...	...	...	...	9
82	Embolism and thrombosis	...	...	...	...	...	...	...	4
84	Diseases of the lymphatic system (lymphangitis, etc.)	...	...	...	...	...	...	...	1

IV.—DISEASES OF THE RESPIRATORY SYSTEM.

88	Diseases of the thyroid body ...	...	...	...	...	...	...	1
89	Acute bronchitis ...	...	...	...	...	...	...	2
90	Chronic bronchitis ...	...	...	...	...	...	...	1
91	Broncho-pneumonia ...	...	...	...	...	...	...	90
92	Pneumonia ...	...	...	...	...	...	...	263
93	Pleurisy ...	...	...	...	...	...	...	4

V.—DISEASES OF THE DIGESTIVE SYSTEM.

100	Diseases of the pharynx	...	...	...	...	...	1
103	Other diseases of the stomach (cancer excepted)	...	...	...	...	...	3
104	Diarrhœa and enteritis (under 2 years)	...	...	...	...	...	3
105	Diarrhœa and enteritis (2 years and over)	...	...	...	...	...	8
108	Appendicitis and typhilitis	...	...	...	...	...	4
109	Hernias, intestinal obstructions	...	...	...	...	...	9
113	Cirrhosis of the liver	...	...	...	...	...	9
115	Other diseases of the liver	...	...	...	...	...	4
116	Diseases of the spleen	3
117	Simple peritonitis (non-puerperal)	2

Carried forward	725
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VI.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM
AND ANNEXA.

Classifi- cation No.	Disease.	No. of Deaths.
	Brought forward	725
120	Bright's disease	8
122	Other diseases of the kidneys and annexa	3
129	Uterine tumour (non-cancerous)	1
133	Non-puerperal diseases of the breast (cancer excepted)	1

VII.—THE PUERPERAL STATE.

135	Puerperal hæmorrhage	1
136	Other accidents of labour	4
137	Puerperal septicæmia	3

VIII.—DISEASES OF THE SKIN AND OF THE CELLULAR TISSUE.

142	Gangrene	1
145	Other diseases of the skin and annexa	2

IX.—DISEASES OF THE BONES AND OF THE ORGANS OF LOCOMOTION.

146	Diseases of the bones (tuberculosis excepted)	2
147	Diseases of the joints (tuberculosis and rheumatism excepted)	2

XI.—DISEASES OF EARLY INFANCY.

151	Congenital debility, icterus and sclerema	11
152	Other diseases peculiar to early infancy	2

XII.—OLD AGE.

154	Senility	4
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XIII.—AFFECTIONS PRODUCED BY EXTERNAL CAUSES.

157	Suicide by hanging or strangulation	1
166	Conflagration	12
167	Burns (conflagration excepted)	2
169	Accidental drowning	2
170	Traumatism by firearms	1
171	Traumatism by cutting or piercing instruments	2
175	Traumatism by other crushing (vehicles, railways, landslides, etc.)	1
184	Homicide by other means	1
185	Fractures (cause not specified)	10
186a	Execution	9

XIV.—ILL-DEFINED DISEASES.

187	Ill-defined organic disease	1
189	Cause of death not specified or ill-defined	9

Total	821
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Included in the foregoing are the following Asiatic and coloured deaths, classified as follows:—

Classifi- cation No.	Disease.	No. of Deaths. Asiatic. Coloured.
4a	Blackwater fever	1 ...
5	Small-pox ... ..	... 1
9	Diphtheria and croup	1 ...
10	Influenza	3 1
18	Erysipelas ... ..	... 1
28	Tuberculosis of the lungs	2 1
37	Syphilis ... ..	... 1
40	Cancer and other malignant tumours of the stomach, liver	2 ...
61	Simple meningitis ... ..	... 1
61a	Cerebro-spinal meningitis	1 ...
64	Cerebral hæmorrhage, apoplexy	2 ...
71	Convulsions of infants	1 1
78	Acute endocarditis ... ..	... 1
79	Organic diseases of the heart	1 ...
84	Diseases of the lymphatic system (lymphangitis, etc.)	1 ...
90	Chronic bronchitis	1 ...
92	Pneumonia	4 1
104	Diarrhœa and enteritis (under 2 years) ... ..	... 2
120	Bright's disease	1 ...
135	Puerperal hæmorrhage ... ..	... 1
151	Congenital debility, icterus and sclerema	8 2
152	Other diseases peculiar to early infancy	1 ...
154	Senility	1 ...
166	Conflagration	1 1
185	Fractures (cause not specified) ... ..	... 1
189	Cause of death not specified or ill-defined	1 ...
	Totals	33 16

TABLE 18.

Return of diseases and deaths (in-patients) in all Government hospitals
for the year 1928.

EUROPEANS.

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
INFECTIVE DISEASES.					
Beri-beri ... ..	...	1	1	1	...
Cerebro-spinal fever ... ..	...	6	1	6	...
Chicken-pox ... ..	...	1	...	1	...
Dengue ... ..	...	1	...	1	...
Diphtheria ... ..	...	4	1	4	...
Dysentery—Amœbic	5	96	4	101	3
Bacillary ... ..	...	8	1	8	...
Endocarditis—infective ... ..	...	11	1	11	2
Enteric	9	56	8	65	10
Erysipelas ... ..	...	3	1	3	...
Gonorrhœa ... ..	...	2	...	2	...
Influenza	5	155	4	160	2
Kala Azar ... ..	...	1	...	1	...
Malaria—(a) Tertian	3	315	5	318	7
(b) Quartan ... ..	...	2	...	2	...
(c) Æstivo-autumnal	10	396	5	406	6
(d) Chronic ... ..	...	13	...	13	...
(e) Blackwater	1	20	3	21	...
Measles ... ..	...	3	...	3	...
Malta fever	1	16	...	17	...
Pneumonia	3	93	19	96	6
Relapsing fever	1	...	...	1	...
Rheumatic fever	1	17	...	18	1
Septicæmia ... ..	...	10	3	10	1
Small-pox ... ..	...	1	...	1	...
Syphilis—(a) Primary ... ..	...	1	...	1	...
(b) Secondary ... ..	...	3	1	3	...
(c) Inherited ... ..	...	1	...	1	...
Tuberculosis	13	48	14	61	12
Whooping cough ... ..	...	5	...	5	...
Other infective diseases ... ..	...	10	...	10	...
INTOXICATIONS.					
Alcoholism ... ..	...	19	...	19	1
Others ... ..	...	14	...	14	...
GENERAL DISEASES.					
Anæmia	1	11	1	12	...
Anæmia—Pernicious	1	2	...	3	...
Diabetes ... ..	...	23	5	23	1
Exophthalmic goitre	1	2	...	3	...
Gout ... ..	...	2	...	2	...
Leucocythæmia	1	...	...	1	...
Hodgkin's disease ... ..	...	1	...	1	...
Myxœdema ... ..	...	2	...	2	...
Purpura ... ..	...	1	...	1	...
Rickets ... ..	...	1	...	1	...
Scurvy ... ..	...	1	...	1	...
Other general diseases ... ..	...	14	1	14	...
LOCAL DISEASES.					
Diseases of the nervous system—					
Sub-section 1—					
Neuritis	4	25	...	29	3
Meningitis ... ..	...	8	4	8	...
Myelitis	3	2	...	5	...
Encephalitis ... ..	...	2	...	2	...
Abscess of brain ... ..	...	1	1	1	...
Congestion of brain ... ..	...	14	...	14	...
Others ... ..	...	4	1	4	...
Carried forward	63	1,448	85	1,511	55

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
Brought forward	63	1,448	85	1,511	55
Diseases of the nervous system (cont.)—					
Sub-section 2—					
Apoplexy	1	8	2	9	1
Paralysis	3	9	2	12	1
Chorea ... ..	...	3	...	3	...
Epilepsy	1	20	...	21	...
Neuralgia ... ..	...	7	...	7	...
Hysteria ... ..	...	14	...	14	...
Sub-section 3—Mental diseases—					
Melancholia ... ..	...	2	...	2	...
Dementia	1	2	...	3	...
Others	1	2	...	3	...
Diseases of the eye—					
Conjunctivitis	1	21	...	22	...
Keratitis ... ..	...	2	...	2	...
Ulceration of cornea	2	15	...	17	...
Iritis ... ..	...	6	...	6	1
Optic neuritis	1	1	...	2	1
Cataract	1	...	1	1	...
Other diseases of the eye	2	6	...	8	...
Diseases of the ear—					
Inflammation	1	40	2	41	...
Other diseases ... ..	...	3	...	3	2
Diseases of the nose	1	45	...	46	1
Diseases of the circulatory system—					
Pericarditis ... ..	...	1	...	1	...
Endocarditis	1	19	9	20	2
Valvular mitral ... ..	...	16	2	16	...
Aortic ... ..	...	2	...	2	...
Arterial sclerosis ... ..	...	6	...	6	...
Aneurism ... ..	...	2	...	2	1
Other diseases of the circulatory system ...	1	43	7	44	1
Diseases of the respiratory system—					
Laryngitis ... ..	...	19	2	19	...
Bronchitis ... ..	...	71	5	71	2
Broncho-pneumonia	2	20	3	22	...
Emphysema ... ..	...	2	...	2	...
Pleurisy	3	24	...	27	2
Empyema ... ..	...	5	2	5	...
Other diseases of the respiratory system—	...	27	...	27	1
Diseases of the digestive system—					
Stomatitis	1	39	...	40	...
Caries of teeth ... ..	...	46	...	46	...
Sore throat ... ..	...	28	...	28	...
Inflammation of tonsils	3	357	...	360	...
Gastritis	2	47	...	49	4
Ulceration of stomach	1	28	5	29	1
Hæmatemesis ... ..	...	5	...	5	...
Dilatation of stomach ... ..	...	1	...	1	...
Stricture of stomach ... ..	...	10	4	10	...
Dyspepsia ... ..	...	15	...	15	...
Enteritis	5	44	4	49	1
Appendicitis	21	335	7	356	16
Colitis	2	35	...	37	2
Ulceration of intestines	1	6	1	7	...
Hernia	3	53	...	56	5
Diarrhœa ... ..	...	13	1	13	1
Constipation ... ..	...	16	...	16	...
Colic ... ..	...	14	...	14	...
Hæmorrhoids ... ..	...	34	...	34	2
Pancreatitis ... ..	...	1	...	1	...
Hepatitis—acute ... ..	...	14	...	14	1
Abscess	3	6	...	9	3
Cirrhosis	1	6	2	7	1
Jaundice ... ..	...	10	...	10	1
Peritonitis	1	14	7	15	1
Ascites ... ..	...	2	...	2	...
Gall stones	3	43	1	46	3
Other diseases of the digestive system—	1	26	1	27	...
Diseases of the lymphatic system—					
Splinitis ... ..	...	3	...	3	...
Inflammation of lymphatic gland ... ..	...	11	...	11	...
Suppuration of lymphatic gland ... ..	...	3	...	3	...
Lymphangitis ... ..	...	2	...	2	...
Other diseases of lymphatic system ... ..	...	7	...	7	1
Carried forward	134	3,185	155	3,319	114

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
Brought forward	134	3,185	155	3,319	114
Diseases of the urinary system—					
Acute nephritis	1	12	3	13	1
Bright's disease	1	12	3	13	..
Pyelitis ... ..	..	22	..	22	3
Calculus ... ..	..	12	..	12	..
Renal colic ... ..	..	10	..	10	1
Cystitis	2	29	..	31	1
Vesical calculus ... ..	..	3	..	3	..
Hæmaturia ... ..	..	4	..	4	..
Other diseases of the urinary system ... ..	..	6	..	6	1
Diseases of the generative system—					
Male organs—					
Urethritis ... ..	..	1	..	1	..
Stricture ... ..	..	15	1	15	..
Prostatitis	2	14	2	16	1
Hydrocele ... ..	..	7	..	7	..
Orchitis ... ..	..	7	..	7	2
Epididymitis ... ..	..	5	..	5	..
Other diseases of the generative system	1	20	..	21	..
Female organs—					
Ovaritis ... ..	..	4	..	4	..
Ovarian cyst	1	31	..	32	1
Endometritis ... ..	..	44	..	44	1
Displacement of uterus	1	18	..	19	1
Vaginitis ... ..	..	8	..	8	1
Amenorrhœa ... ..	..	2	..	2	..
Dysmenorrhœa ... ..	..	5	..	5	..
Menorrhagia	1	27	..	28	..
Leucorrhœa ... ..	..	3	..	3	..
Abortion	2	57	2	59	1
Delayed labour ... ..	..	2	..	2	..
Postpartem hæmorrhage ... ..	..	1	..	1	..
Retained placenta ... ..	..	4	..	4	..
Premature birth ... ..	..	5	1	5	..
Mastitis ... ..	..	3	..	3	..
Confinements ... ..	..	6	..	6	..
Other diseases of female organs	3	75	3	78	1
Diseases of organs of locomotion—					
Osteitis ... ..	..	17	..	17	1
Arthritis	1	25	2	26	..
Spondylitis ... ..	..	11	..	11	..
Bursitis ... ..	..	3	..	3	..
Other diseases of organs of locomotion	2	14	..	16	2
Diseases of the connective tissue—					
Cellulitis	3	69	2	72	2
Abscess	1	71	..	72	3
Other diseases of the connective tissue ... ..	..	13	..	13	1
Diseases of the skin—					
Urticaria ... ..	..	9	..	9	..
Eczema	1	17	..	18	1
Boil	1	4	..	5	..
Carbuncle ... ..	..	19	..	19	..
Herpes ... ..	..	8	1	8	..
Psoriasis ... ..	..	2	..	2	..
Oriental sore ... ..	..	1	..	1	..
Acne ... ..	..	1	..	1	..
Tropical ulcers	1	21	..	22	2
Other diseases of the skin ... ..	..	8	..	8	..
Injuries—General	4	60	6	64	7
Local	12	361	2	373	22
Fractures and burns	3	94	7	97	3
Surgical operations—					
Major (1,327)	1	57	..	58	1
Minor (794) ... ..	..	160	4	160	..
Tumours—					
Malignant	2	40	14	42	2
Benign ... ..	..	25	4	25	1
Malformations ... ..	..	13	4	13	..
Poisons ... ..	..	34	2	34	2
Snake bites ... ..	..	1	..	1	..
Parasites—Protozoa ... ..	..	2	..	2	..
Cestoda—					
Hydatid ... ..	..	2	..	2	..
Tænia solium ... ..	..	3	..	3	..
Tænia saginata ... ..	..	3	..	3	..
Carried forward	181	4,827	218	5,008	180

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
Brought forward	181	4,827	218	5,008	180
Parasites—Nematoda—					
Bilharzia	1	16	...	17	...
Ankylostomiasis ... ..	...	1	...	1	...
Insecta—					
Myiasis ... ..	...	2	...	2	...
Senility	1	1	1	2	1
Debility ... ..	...	5	...	5	...
Insolation ... ..	...	2	...	2	...
Not otherwise classified	1	141	...	142	4
Total	184	4,995	219	5,179	185

TABLE 19.

Return of diseases and deaths (in-patients) in all Government hospitals
for the year 1928.

NATIVES.

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
INFECTIVE DISEASES.					
Cerebro-spinal fever ... ..	...	20	17	20	...
Chicken-pox ... ..	...	9	...	9	...
Dysentery—Amœbic ... ..	...	65	17	65	3
Bacillary	1	19	6	20	1
Enteric	2	16	7	18	1
Erysipelas ... ..	...	1	...	1	...
Gonorrhœa	2	108	...	110	20
Influenza ... ..	...	312	6	312	2
Leprosy—(a) Nodular ... ..	...	2	...	2	...
(b) Anæsthetic ... ..	...	1	...	1	...
Malaria—(a) Tertian	6	73	5	79	1
(b) Æstivo-autumnal	2	292	7	294	7
(c) Chronic ... ..	...	5	...	5	...
(d) Blackwater ... ..	...	4	1	4	...
Measles ... ..	...	2	...	2	...
Malta fever ... ..	...	1	...	1	1
Pneumonia	29	996	292	1,025	35
Relapsing fever ... ..	...	1	...	1	...
Rheumatic fever ... ..	...	3	...	3	...
Septicæmia	1	15	8	16	...
Small-pox ... ..	...	1	...	1	...
Syphilis—(a) Primary	37	298	2	335	26
(b) Secondary ... ..	...	193	3	193	37
(c) Inherited	1	15	4	16	2
Tetanus ... ..	...	10	9	10	...
Tuberculosis	16	166	116	182	14
Whooping cough ... ..	...	7	...	7	...
Yaws ... ..	...	10	2	10	2
Other infective diseases	5	36	7	41	5
INTOXICATIONS.					
Alcoholism ... ..	...	2	...	2	...
Others	2	35	...	37	...
GENERAL DISEASES.					
Anæmia ... ..	...	3	...	3	...
Exophthalmic Goitre ... ..	...	2	...	2	1
Purpura ... ..	...	1	...	1	...
Scurvy	17	105	7	122	37
Other general diseases	1	30	6	31	...
LOCAL DISEASES.					
Diseases of the nervous system—					
Sub-section 1—					
Neuritis	2	35	...	37	1
Meningitis	1	39	30	40	1
Myelitis ... ..	...	1	...	1	...
Encephalitis ... ..	...	3	1	3	1
Abscess of brain ... ..	...	1	1	1	...
Congestion of brain ... ..	...	7	1	7	...
Others ... ..	...	4	...	4	...
Sub-section 2—					
Apoplexy	1	6	1	7	...
Paralysis	12	18	5	30	10
Chorea ... ..	...	1	...	1	...
Epilepsy	1	26	5	27	...
Neuralgia	1	4	...	5	...
Others	2	1	...	3	...
Sub-section 3—					
Idiocy ... ..	...	2	...	2	...
Mania ... ..	...	1	...	1	...
Dementia ... ..	...	10	...	10	...
Others ... ..	...	6	2	6	...
Carried forward	142	3,024	568	3,166	208

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
Brought forward	142	3,024	568	3,166	208
Diseases of the eye—					
Conjunctivitis	6	85	...	91	2
Keratitis	1	7	...	8	1
Ulceration of cornea	1	24	...	25	...
Iritis ... ..	...	2	...	2	1
Optic neuritis ... ..	...	2	...	2	...
Cataract	2	6	...	8	1
Other diseases of eye	2	24	...	26	4
Diseases of the ear—					
Inflammation ... ..	...	14	...	14	1
Other diseases	1	4	...	5	...
Diseases of the nose ... ..	...	8	...	8	...
Diseases of the circulatory system—					
Pericarditis	2	1	...	3	...
Endocarditis ... ..	...	14	12	14	1
Valvular mitral ... ..	...	10	3	10	2
Aortic ... ..	...	1	...	1	...
Aneurism ... ..	...	2	...	2	...
Other diseases of circulatory system	1	5	2	6	1
Diseases of the respiratory system—					
Laryngitis ... ..	...	5	...	5	...
Bronchitis	2	82	3	84	3
Broncho-pneumonia	1	16	10	17	...
Abscess of lung ... ..	...	1	1	1	...
Pleurisy	1	18	1	19	1
Empyema	1	3	...	4	...
Other diseases of the respiratory system ... ..	...	12	...	12	...
Diseases of the digestive system—					
Stomatitis ... ..	...	2	...	2	...
Caries of teeth ... ..	...	9	...	9	1
Sore throat ... ..	...	4	...	4	...
Inflammation of tonsils	1	37	...	38	...
Gastritis	2	11	1	13	...
Dilatation of stomach ... ..	...	1	...	1	1
Stricture of stomach ... ..	...	1	1	1	...
Dyspepsia ... ..	...	17	...	17	...
Enteritis ... ..	...	7	3	7	...
Appendicitis ... ..	...	15	4	15	2
Colitis ... ..	...	2	...	2	...
Ulceration of intestines	2	1	1	3	...
Sprue ... ..	...	1	1	1	...
Hernia ... ..	...	23	1	23	...
Diarrhoea ... ..	...	22	1	22	...
Constipation	1	39	...	40	...
Colic	2	25	...	27	...
Hæmorrhoids ... ..	...	7	...	7	...
Hepatitis—acute	1	3	1	4	...
Abscess	5	10	3	15	...
Cirrhosis ... ..	...	3	2	3	...
Jaundice ... ..	...	1	...	1	...
Peritonitis ... ..	...	11	7	11	1
Ascites ... ..	...	5	1	5	...
Gall stones ... ..	...	1	...	1	...
Other diseases of the digestive system ... ..	...	19	12	19	1
Diseases of the lymphatic system—					
Splenitis	1	5	2	6	...
Inflammation of lymphatic gland ... ..	...	13	...	13	...
Suppuration of lymphatic gland ... ..	...	10	...	10	...
Lymphangitis	2	24	1	26	3
Other diseases of the lymphatic system ... ..	...	3	1	3	...
Diseases of the urinary system—					
Acute nephritis ... ..	...	3	2	3	...
Bright's disease	1	11	4	12	1
Pyelitis ... ..	...	3	1	3	...
Calculus ... ..	...	1	...	1	...
Cystitis	2	14	...	16	1
Suppression ... ..	...	1	1	1	...
Other diseases of the urinary system ... ..	...	2	1	2	...
Carried forward	183	3,737	652	3,920	238

Diseases	Remaining in hospital at end of 1927	Yearly total		Total cases treated	Remaining in hospital at end of 1928
		Admis- sions	Deaths		
Brought forward	183	3,737	652	3,920	238
Diseases of the generative system—					
Male organs—					
Stricture ... ..	...	4	1	4	...
Condyloma ... ..	...	1	...	1	...
Inflammation of scrotum ... ..	...	1	...	1	...
Hydrocele ... ..	...	9	1	9	1
Orchitis	1	15	...	16	...
Epididymitis ... ..	...	1	...	1	...
Other diseases of the generative system	1	32	...	33	...
Female organs—					
Ovaritis ... ..	...	1	...	1	...
Ovarian cyst ... ..	...	3	...	3	...
Endometritis ... ..	...	7	...	7	...
Displacement of uterus ... ..	...	2	...	2	...
Vaginitis ... ..	...	4	...	4	1
Dysmenorrhœa ... ..	...	1	...	1	...
Menorrhagia ... ..	...	2	...	2	...
Leucorrhœa ... ..	...	1	...	1	...
Abortion	1	15	...	16	...
Delayed labour ... ..	...	12	5	12	...
Postpartum hæmorrhage ... ..	...	2	...	2	...
Retained placenta ... ..	...	8	...	8	...
Premature birth ... ..	...	2	1	2	...
Puerperal septicæmia ... ..	...	2	2	2	...
Mastitis ... ..	...	4	...	4	...
Other diseases of the female organs ...	1	17	1	18	...
Diseases of organs of locomotion—					
Osteitis ... ..	...	11	...	11	1
Arthritis	1	14	1	15	...
Spondylitis ... ..	...	4	...	4	...
Bursitis ... ..	...	16	...	16	...
Other diseases of organs of locomotion ...	...	41	...	41	2
Diseases of connective tissue—					
Cellulitis	7	119	2	126	6
Abscess	6	70	...	76	8
Elephantiasis ... ..	...	8	...	8	...
Other diseases of connective tissue	1	3	1	4	...
Diseases of the skin—					
Urticaria ... ..	...	4	...	4	...
Eczema ... ..	...	13	...	13	...
Boil ... ..	...	1	...	1	...
Carbuncle ... ..	...	2	...	2	...
Oriental sore	3	12	1	15	...
Scabies ... ..	...	5	...	5	...
Acne ... ..	...	1	...	1	...
Prickly heat ... ..	...	3	...	3	...
Tropical ulcers	28	144	1	172	23
Other diseases of the skin	1	3	1	4	1
Injuries—General	14	141	31	155	12
Local	107	1,118	12	1,225	70
Fractures and burns	18	117	16	135	16
Surgical operations—					
Major	3	117	9	120	2
Minor ... ..	...	8	...	8	...
Tumours—					
Malignant	1	36	12	37	3
Benign ... ..	...	26	4	26	2
Malformations ... ..	...	1	...	1	...
Poisons ... ..	...	14	5	14	...
Snake bites ... ..	...	20	...	20	...
Parasites—Animal ... ..	...	6	...	6	...
Protozoa ... ..	...	1	...	1	...
Cestoda—					
Tænia solium ... ..	...	2	...	2	...
Nematoda—					
Bilharzia	2	15	...	17	...
Ankylostomiasis	2	2	...	4	...
Oxyuris ... ..	...	1	...	1	...
Suicide ... ..	...	1	1	1	...
Not otherwise classified ... ..	...	154	...	154	...
Total	381	6,137	760	6,518	385

TABLE 20.

Table giving the number of beds in each Government Hospital and Ingutsheni Mental Hospital, the daily average number of patients treated, the revenue and expenditure of each, and the approximate charge on public funds for each patient in hospital during 1928.

Name of hospital.	No. of beds.		Daily average of patients treated.			No. of nursing staff.	No. of native staff.	Gross expenditure.	Revenue.	Deficit of revenue over expenditure.	Approximate charge on public funds for each patient treated.
	White.	Coloured and native.	White.	Coloured and native.	Total white, coloured and native.						
Salisbury ...	95	100	80.5	83.6	164.1	55	67	27,759	10,700	17,059	£ 4 14 2
Bulawayo ..	78	67	64.44	89.39	153.83	49	54	20,225	10,114	10,111	3 0 0
Umtali ...	36	20	17.6	18.5	36.1	7	13	4,955	2,321	2,634	3 0 3
Gwelo ...	30	53	12.71	37.4	50.11	6	15	4,917	2,215	2,702	2 8 10
Fort Victoria ...	15	20	5.95	8.97	14.92	4	12	2,387	602	1,785	5 3 5
Gwanda ...	8	26	1.35	12.9	14.25	2	7	1,261	312	949	3 4 7
Enkeldoorn ...	6	7	1.92	4.57	6.49	2	5	1,158	204	954	4 17 10
Gatooma ...	25	93	8.66	110.98	119.64	7	22	5,470	1,583	3,887	3 7 5
Shamva ...	18	19	1.83	15.02	16.85	3	13	1,895	423	1,472	3 19 2
Sinoia ...	8	16	2.19	11.58	13.77	3	10	1,725	423	1,302	4 0 2
Belingwe ...	8	14	.34	4.29	4.63	1	3	645	51	594	7 1 5
Ingutsheni Mental Hospital	72	250	50.6	184.03	234.63	14	27	7,949	1,526	6,423	20 3 11

TABLE 21.

STATEMENT OF PROGRESS AT GOVERNMENT HOSPITALS AND ASYLUMS FOR THE YEAR 1928.

Name of hospital.	Total number of patients maintained.	Total expenditure.	NO. OF UNITS MAINTAINED.						EXPENDITURE.																	EARNINGS.				REVENUE RECEIVED.			Revenue per cent. of total expenditure.	Cost per caput per diem on gross expenditure basis.	Loss to Government represented by deficiency of revenue against expenditure, each patient.	Proportion of total expenditure under Vote 7 B allocated on basis of European staff.	Per cent. of total.	TOTAL AMOUNT OUTSTANDING.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
			Staff.		Patients.		Total.		Provisions and medical comforts, excluding produce.	Per cent. of total.	Drugs, surgical instruments and sundries.	Per cent. of total.	Furniture, equipment, clothing and repairs.	Per cent. of total.	Fuel, light and water.	Per cent. of total.	Laundry staff and materials.	Per cent. of total.	Sanitary.	Per cent. of total.	Salaries.	Per cent. of total.	Office and other expenses.	Per cent. of total.	Paying patients.		Represented by treatment of free patients; allowing 5/- a day for whites and 2/6 a day for natives.	Total.	White.	Native.	Total.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Sales :—£89.

Sales :—£96.

* Includes £1,110, supplies from hospital farm and garden.
† In calculating this figure, value as above is deducted from total expenditure.



TABLE 22.

Return of Government and pauper patients treated in Government hospitals during 1928.

Name of hospital	Number of free patients			Total number of units treated		Cost of maintenance	Loss of revenue represented, reckoning 5s. a day for whites, and 2s. 6d. a day for natives, plus extras
	White	Native and coloured	Totals	White	Native and coloured		
Salisbury	290	696	986	6,188	18,347	£ 5,571 9 3½ s. d.	£ 3,840 7 6 s. d.
Bulawayo	445	1,486	1,931	6,706	18,625	4,644 0 4	4,004 12 6
Umtali	30	243	273	1,677	5,083	1,675 13 3	1,054 12 6
Gwelo	85	302	387	1,258	8,819	1,763 9 6	1,416 17 6
Fort Victoria	63	186	249	720	2,481	560 3 6	490 2 6
Gwanda	7	289	296	30	3,856	453 7 4	489 10 0
Enkeldoorn	12	80	92	137	1,255	249 8 0	191 2 6
Gatooma	38	615	653	403	36,886	4,268 9 6	4,711 10 0
Shamva	11	273	284	37	3,586	558 10 11	457 10 0
Sinoia	5	82	87	36	1,818	285 16 6	236 5 0
Belingwe	6	59	65	11	73	14 7 0	11 17 6
Ingutsheni Mental Hospital	49	226	275	13,886	61,427	7,688 4 0½	11,149 17 6
Totals	1,041	4,537	5,578	31,089	162,256	27,732 19 2	28,054 5 0

